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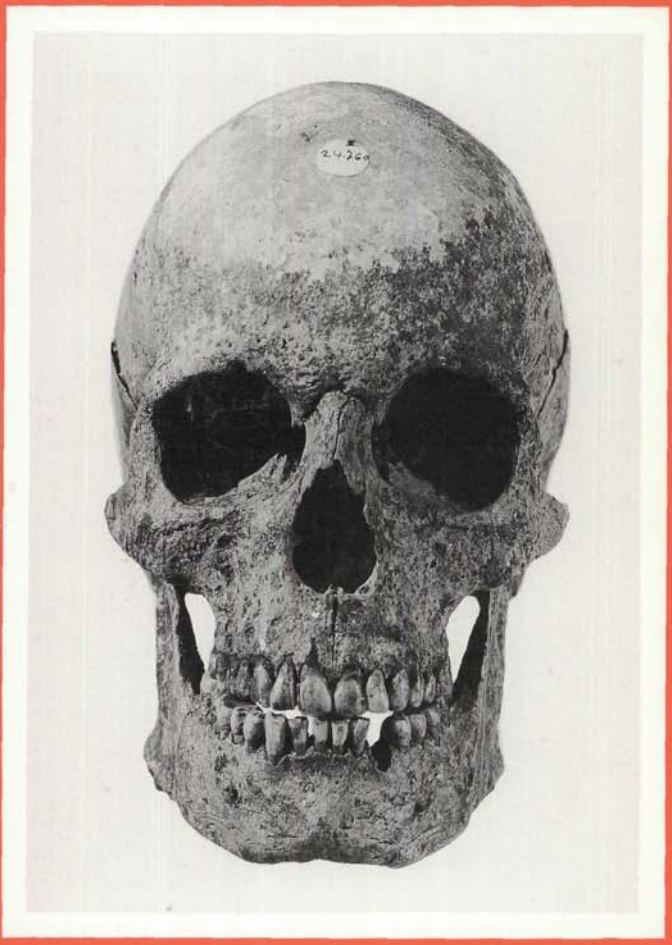

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***Cover Picture*: Frontal view of a modern Swedish skull.**
(See article: *Positive Correlations between Brain Size and Intelligence.*)

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The Human Trinity: The Three Consciousnesses of Man

Richard Atnally
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> Our normal waking consciousness, rational consciousness as we call it, is but one special type of consciousness whilst all about it, parted from it by the filmiest of screens, there lie potential forms of consciousness entirely different.
>
> William James, *The Varieties Of Religious Experience* 388

> . . . we see in all these instances most undoubted trinities, because they are wrought in ourselves, or are in ourselves, when we remember, look at or desire these things. . . .
>
> St. Augustine, *On the Trinity* 838

A pervasive idea in intellectual history has been the notion of threeness as a framework for understanding the world. Georges Dumezil held that the tripartite division was "an ancient habit of language and thought particular to Indo-European peoples" (Davis 33), and Duby followed in showing that "the tripartite conception" was one of ". . . those structural (or systemic) articulations of human experience, with their continuities and interruptions, which inform a cultural history running, in this case, from Indo-European antiquity to the French Revolution" (Bisson vii). The Indo-European influence no doubt affected Christianity profoundly. Commenting on the major human faculties, Augustine observed: "I would that men would consider these three, that are in themselves" (*Confessions* 113). The Greeks also felt early the force of threeness in history. "For, as the Pythagoreans say", noted Aristotle with approval, "the world and all that is in it is determined by the number three. . . (359)." Finally, as we shall see, the Renaissance was perhaps even more lavish in finding triplicities in things, and the tripartite concept was very much central to the Enlightenment and the modern period.

Whence all this threeness? This essay will attempt a new perspective on this deep-rooted, universal concept, arguing that the

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multi-faceted implications of these usages reflect, indeed, a master three-fold structuring in the human mind and history, which I call the human trinity. In so doing I will sketch in broad outline a developmental theory of historical knowledge, related and indebted to the psychology of Jean Piaget. I begin at the location of a famous twentieth-century "trinity", the Los Alamos testing site.

II

On the modern horizon, filling it totally, is an image — if ever an image dominated an age it is this one, more piercingly than even the cathedrals or the Virgin dominated the Middle Ages — pressing our eyelids and sinking into our minds and hearts the terror of all the ages: the image of the nuclear cloud. Among the first and most famous responses to this image came from the man who more than anyone else helped to create it, J. Robert Oppenheimer, who, on seeing the fireball, was reminded of these lines from the *Bhagavad Gita*, when Vishnu informs the hero of his power:

> If the radiance of a thousand suns
> Were to burst at once into the sky,
> That would be like the splendor
> of the Mighty One. . .
> I am become Death,
> The shatterer of worlds. (qtd. in Lamont 3)

This emotive response of mythic images from the architect of the atomic age, who in less than twenty-seven months at Los Alamos brought man over the edge of history, seems a startling paradox. The paradox goes deeper than the complexity of a scientist who was also a reader of Sanskrit religious epic.

It is clear that Oppenheimer also joined in the general exclamation uttered at the time of the explosion: "It worked, my God, the damn thing worked!" (238). Indeed, Oppenheimer was more responsible than any other man for the identification the Los Alamos scientists made with the technological task of creating the bomb. "We were so intimately bound to it," said one of them, "in a technical sense that we felt it as a special triumph" (296). This pride in scientific achievement was summarized by General Groves, the

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military leader, who said, "Those of us who saw the dawn of the Atomic Age. . . know that when man is willing to make the effort, he is capable of accomplishing virtually anything" (308).

With similar bravado, Oppenheimer noted: "A scientist cannot hold back progress because of fears of what the world will do with his discoveries" (267). But in his last talk before he left Los Alamos he expressed another mood: "Our pride must be tempered with a profound concern" (311). At this point both the mythic and technical attitudes gave way to a kind of third response, what might be called a moral and metaphoric one. "In some crude sense," Oppenheimer insisted, "which no vulgarity, no humor, no overstatement can quite extinguish, the physicists have known sin; and this is a knowledge which they cannot lose" (297). Similarly, at a meeting in President Truman's office, Oppenheimer explained, to the President's chagrin, "We have blood on our hands" (qtd. in Joravsky 7).

Oppenheimer's multi-levelled reactions — mythic story, technical control, moral-metaphoric drama — were by no means unique to him, although he voiced them with a striking eloquence. William L. Laurence, the science journalist, described the test in the terms of a "mighty thunder," and with such Biblical language as "if the first man could have been present at the moment of Creation when God said, 'Let there be light,' he might have seen something very similar to what we have seen" (qtd. in Lifton 66). Indeed in a recent article on the effect of the atom bomb's "imagery of extinction," Robert J. Lifton argues that its association with religious imagery of Armageddon is "a central factor in the growth of fundamentalism" (64) throughout the world today.

Truman himself was spellbound by the explosive force of the bomb and boasted technologically, "What has been done is the greatest achievement of organized science in history" (qtd. in Lamont 267). But in announcing the atomic bombing of Hiroshima, he cited theological guidance, pledging that the weapon would be used "in His ways and to His purposes" (qtd. in Canby C16). And much later in 1958, he described the bomb in terms of a Biblical drama: "The old Hebrew prophets presented the idea of the destruction of the world by fire after their presentation of a destruction by water. Well, that destruction is at hand unless the great leaders of the world prevent it" (A9). Churchill also received the news of the weapon with multiple levels of reference. "What was gunpowder? Trivial. What was

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electricity? Meaningless. This atomic bomb is the Second Coming in Wrath" (qtd. in Lamont 261).

Oppenheimer's ambivalence, however, came to epitomize in a special way the dilemma of modern man. This dilemma, an ageless one, but particularly exacerbated by modern prowess, is that there are within man forces — emotional and moral — representing fears of ever-increasing human knowledge while at the same time there are contradictory, technical forces so world-converting that man cannot turn his back on them.

Oppenheimer's responses to the dawn of the atomic world mirrors, I think, a trinity of self by which man, individually and historically, constructs his responses to the world. This trinity consists of three layers of consciousness, the major elements of which are expressed through mythic story, metaphoric thinking and lastly, scientific reasoning.

The idea of multi-leveled states in man and in history is cogently set forth by the art critic, E. H. Gombrich:

> No lesson of psychology is perhaps more important for the historian to absorb than this multiplicity of layers, the peaceful coexistence in man of incompatible attitudes. There never was a primitive stage of man when all was magic; there never happened an evolution which wiped out the earlier phase. What happens is rather that different institutions and different situations favor and bring out a different approach to which both the artist and his public learn to respond. But beneath these new attitudes, or mental sets, the old ones survive and come to the surface in play or earnest. (113-4)

There is, I will argue, a kind of triple "mental set" socialized within us throughout our evolutionary history on the planet. This results in a trifocal vision — whether we are conscious of it or not — not only in the signal efforts of human history such as in the great climax of scientific explorations, but also in our everyday dispositions and attitudes.

Another critic of social transformations, Alvin Toffler, argues, in his *The Third Wave*, that every civilization "must explain — whether through myth, metaphor or scientific theory — how nature works (118). Essentially we possess three master mental sets, a mythic,

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metaphoric and measuring one. Since the scientific revolution in sixteenth and seventeenth-century Europe, our "older" mythic and metaphoric minds have been relegated to what are now generally valued as less relevant areas of modern thought, namely religion, myth, and poetry. But, as we have grown to understand more and more in this century, unless we integrate these earlier modes of apprehending the world with our new technological ones, "the center cannot hold" (Yeats 3). In his *The Invisible Pyramid* Loren Eiseley best expressed this need for the modern mind to return not only to the ethical visions of "axial" thinkers of the first millennium B.C. like Buddha, Christ and Confucius, but to a primal "green world":

> Today man's mounting numbers and his technological power to pollute his environment reveal a single demanding necessity. . . . He must now incorporate from the wisdom of the axial thinkers an ethic not alone directed towards his fellows, but extended to the living world around him. (63).

III

If there is a triple sense of reality evolved and operating in man from the beginning to the present, evidence of a tripleness sensibilty should be found deeply and universally in his thoughts and works. Such is the case, as we proceed from the twentieth century scientist, back through the recesses of time and myth.

On the cover of Joseph Campbell's magnificent collection of *The Mythic Image* appears a central representation — what he calls a "sublime triadic image" — of the three-headed Hindu god, Shiva (12). Three faces of the god appear on this larger-than-life statue: the profile on the left represents the male principle, on the right the female principle, and in the middle the union of these, and all other opposites of creation. Not only in Hindu statuary does this tripleness appear; in the *Bhagavad Gita* the face of the god, Vishnu, is presented as a flaming fire before which the "triple world trembles" (Edgerton 111). In Buddhist art, too, at the Horyu-ji temple in Naira, Japan, there is a triple presentation (the "Shaka triad") of deities — three seated Buddhas dominate the inner, quiet sanctuary of the *Kondo* (Bunsaku 20-6). Surrounding this central shrine are numerous other triple figures flanked by accompanying standing or sitting Bodhi-

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sattvas. According to ancient accounts, similar triadic godships existed in Egypt, where Osiris supposedly had three sons – Anubis, Macedon, Hercules, Aegyptius (qtd. in Wind 250); and in nearby Persia, where Plutarch reported a Chaldean trinity consisting of OhrmazdMithra-Ahriman (250).

If tripleness is a major theme in Egypt and the Indo-European East its presence in the Indo-European West is even more profound. The Christian Trinity became the traditional centerpiece of Western religion, but earlier in time, there were, according to Edgar Wind, no less than "120 triadic groups in Greek myth and ritual" (248). Major among these were the Three Fates, the Three Graces, the Three Goddesses (Aphrodite, Hera, Athena) who appealed to Paris's "judgement" and thereby instigated the Trojan War, the triple-faced goddesses Diane and Hecate (249-51), and moving back into archaic times, the threefold Moon Goddess described by Robert Graves in *The White Goddess* as the source of popular religious ceremonies throughout the prehistoric Mediterranean world (70).

Not only is the trinity notion pervasive throughout religious belief systems; it is at the heart of major philosophical, psychological and social structurings. In the Western philosophical tradition we see this in the pivotal figures of Plato, and Aristotle, as well as in the earlier, more Eastern thought of Pythagoras.

In Plato's *Dialogues* the idea of a tripartite division of the soul plays a key role, particularly in the *Republic*, where the rational principle rules over the passionate, making it its ally, and both principles in turn rule the "concupiscent" (353-4). For Plato, the order of the state and the individual demand these three principles be harmoniously integrated by the just man:

> . . . he sets in order his own inner life, and is his own master and his own law, and at peace with himself; and when he has bound together the three principles within him, which may be compared to the higher, lower, and middle notes of the scale, and the intermediate intervals — when he has bound all these together, and is no longer many, but has become one entirely temperate and perfectly adjusted nature, then he proceeds to act. (355)

This "three-souls" moral doctrine is also essential to Plato's vision of reason's sovereignty and the soul's ascent to the heavens which

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appears in the *Timaeus* (476) and the *Phaedrus* (the "noble rider-chariot" metaphor) (124).

The concept of three-souls itself harks back, according to John Burnet, to a "primitive psychology. . . doubtless older than Socrates; for it stands in close relation to the Pythagorean doctrine of the 'Three Lives'" (40). The latter emphasized the soul's progress through "lower," more sensual states of existence by means of philosophy, and in an influential commentary on this notion, Cicero compared these three stages to three kinds of people who come to a festival. First there are those who come to sell goods (sensual life), then there are those who come to engage in the games (active life), and finally those who come as spectators (philosophical life) (433).

The concept of threeness, and its connections of Pythagorean thought, is alluded to by Aristotle in a discussion of three dimensionality in his *De Caelo*, and then profoundly extended to include the logical temporal triad of "beginning-middle-end":

> A magnitude if divisible one way is a line, if two ways a surface, and if three a body. Beyond these there is no other magnitude, because the three dimensions are all that there are, and that which is divisible in three directions is divisible in all. For, as the Pythagoreans say, the world and all that is in it is determined by the number three, since beginning and middle and end give the number of an 'all,' and the number they give is the triad. (359)

In his rational conceptualization of art, Aristotle also highlighted the idea of a threefold temporal division: the heart of drama (the greatest of all art) is its "plot," which must follow laws of necessity and unity by means of logical sequences of "beginning," "middle," and "end." That Nature itself had a threeness in it discoverable by religious, moral, and logical processes of the mind is basic to Pythagorean-Platonic and Aristotelian philosophy and art — for each, it is not too strong to say, "the world and all that is in it is determined by the number three."

IV

Triune patterns go deeper, however, than these religious and

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philosophical perspectives. A tripleness is in fact discernible in the basic structuring of all primitive social action, i.e., in the "rites of passage," which is set forth in a triadic sequence of separation, initiation, and return.

This triad, according to Campbell, is at the exact center of myth: "The standard path of the mythological adventure of the hero is a magnification of the formula represented in the rites of passage: separation-initiation-*return*: which might be named the nuclear unit of the monomyth" (*Hero* 30). As a consequence, this triadic myth pattern informs all folk tales, fairy tales, and primitive narratives. Campbell describes this movement thus:

> A hero ventures forth from the world of common day into a region of supernatural wonder: fabulous forces are there encountered and a decisive victory is won: the hero comes back from this mysterious adventure with the power to bestow boons on his fellow man. (30)

Myth-structuring itself may be seen as an elaboration of primitive puberty rituals, involving a fundamental quest for identity: first, separation from symbiotic union with the family, tribe, society; secondly, initiation into a new state of manhood or womanhood; and thirdly, return or reunion as a fully mature member of the group. The "monomyth" expresses itself thus in a kind of triple "plot" (involving not only art but life), structuring man's journey through three key stages of life: infancy, manhood, maturity.

As "the civilization of antiquity emerged out of primitivity" the ritual sequence, as John W. Perry notes, became spiritualized to signify first the soul's separation from a fallen world, secondly its spiritual initiation and rebirth and lastly, its return to God (117-8). Such a triadic pattern is at the core of the mystery cults of the ancient world, particularly Orphism and Eleusianism (117-8). The latter, in turn, were connected with the Pythagorean mystery cults, eventually influencing Plato and later Orphic thinking, such as Virgil's vision of Aeneas's descent into the underworld (paralleled later in Dante's separation, rebirth and return to godhead in the *Divine Comedy*) (126).

Neo-Platonic and Christian fusions of primitive myths and Pythagorean-Platonic mysticism inevitably stressed the idea of tripleness.

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Plotinus, for example, pictured the soul's ascent through a trinity of "soul, *Nous* and the One" (Rist 70). Proclus, in his *Elements of Theology,* Prop. 35, declared divine order to have a "threefold nature" and, along with other Neo-Platonics, he emphasized a triple-world rhythm of "inherence," "procession" and "reversion" (qtd. in Wind 38). The sense of triple cycles was so widespread among these thinkers that the fifth century philosopher, Fulgentius, in his *Mythologiae,* II, i, summarized Platonic thinking by saying, "The philosophers have decided that the life of humanity consists of three parts, of which the first is called theoretical, the second practical, the third pleasurable: which in Latin are named *contemplativa*, *activa, voluptaria*" (81-2).

In the early Renaissance in Florence, Neo-Platonists combined Classical-Orphic mythology with Platonic-Christian dogmas into even more elaborate trinities. Thus Pico della Mirandola, in his *Conclusiones . . .de modo intelligendi hymnos Orphei,* no. 8, could write:

> He that understands profoundly and clearly how the unity of Venus is unfolded in the trinity of the Graces, and the unity of Necessity in the trinity of the Fates, and the unity of Saturn in the trinity of Jupiter, Neptune, and Pluto, knows the proper way of proceeding in Orphic Theology. (qtd. in Wind 36)

And Marsilio Ficino, in *De Amore,* II, 1 went so far as to argue that the Trinity "was regarded by the Pythagorean philosophers as the measure of all things; the reason being, I surmise, that God governs things by threes, and that the things themselves also are determined by threes" (42).

To be sure, the most influential expressions of trinities in Western thought came from St. Augustine — triplicities of philosophy (natural, supernatural, and moral), of science (physical, logical, ethical), of human nature (being, knowing, loving) and other analogies of the divine trinity are widespread throughout his works. But what became of great significance was Augustine's new *linear* emphasis on man's religious education in time through analogy to the triple states of infancy, youth and maturity *(Letters* 37). In so doing, Augustine seized upon the idea explored earlier by St. Paul and succeeding theologians that humankind moved forward towards a more perfect spiritual state just as an individual man grew to maturity. Tertullian, for example, in *De virginibus velandis,* had argued

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that righteousness advanced from a rudimentary state of natural fear of God "through the Law and the Prophets to infancy; from that stage it passed, through the Gospel, to the fervour of youth: now, through the Paraclete, it is settling into maturity" (qtd. in Crane 275).

After St. Augustine, the Christian drama was increasingly constructed in linear terms of a beginning, middle and final state; and that triple drama was frequently described in such analogous terms as "glory, sin, redemption," or "glory, ruin and restoration" (fundamental patterns appearing in Milton and Christian humanists up through the nineteenth century) (Mack l-li). Such temporal triads, with their parallels to human developmental stages, recall the Aristotelian concept of "plot." However, these triads also relate to the triadic structuring of primitive myths. For in formulating the mythic "separation-initiation-return" trilogy (and its spiritualized Pythagorean-Platonicversions) Christianity projected it into historical reality, presenting a three-act Providential *history* drama consisting of a glorious past (Eden), a present ruined (but redeemable) state, and a final, restored state.

The universal drama was, like the human drama, of a triple nature. Carl Becker underscores the power of this formula:

> To be aware of present trials and misfortunes, to look back with fond memories to the happier times (imagined so at least) of youth, to look forward with hope to a more serene and secure old age — what could more adequately sum up the experience of the great majority? And what was the Christian story if not an application of this familiar individual experience to the life of mankind? Mankind had its youth, its happier time in the Garden of Eden, to look back upon, its present middle period of misfortunes to endure, its future security to hope for. (126)

A key distinction between earlier mythic sequences and the Christian drama lay, then, in the latter's emphasis on the value of forward movement in time. Of course, the Christian pattern was still (as were all ancient time notions) predominantly cyclical (from Eden to Paradise), and eternalist, but the introduction of linear movement and historical progress was clear. The valorization of time, of course, was implicit in earlier Old Testament narrations of the Jews as the chief actors in a plotted drama culminating in a Messianic realm. But

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temporal consciousness was reinforced in Christianity by a historically incarnated deity and the promise of a Second Coming which often led to earthly millennial thinking. Tertullian's vision of the Paraclete opened itself to such an interpretation, and a more radically historical picture of the threefold drama was provided by the twelfth-century Calabrian monk, Joachim De Fiore.

Joachim argued that the first great stage in human history was under the "ascendency of the flesh," which transformed into a second stage under Christ, in which man was left between "the flesh and the spirit," until a final, third stage — that of pure spirit — would usher in an age of Contemplatives (whose lives would be led entirely through the mind) (qtd. in Nisbet 95). Joachim's triadic division of history, as Robert Nisbet shows, was an effort to "temporalize" the Christian trinity, although its final state was clearly a spiritualized one[96].

The concept of a triple structuring of reality in medieval France has been underscored in recent studies from the French *Annales* School. Georges Duby, Georges Dumezil and Jacques LeGoff have all highlighted tripleness as a master *mentalite*. Duby traces it running from Proto-Indo-European triads of social classes and divine beings up through the three orders or "estates" of medieval society (priests, warriors, workers) (Duby 1). In a similar fashion, LeGoff, looking for the "historical and logical conditions" for the origin of the idea of Purgatory, finds it in medieval Christianity's "thinking in threes," and its growing sense of time as "linear" (Davis 32).

In seventeenth- and eighteenth-century England the notion of a progressivist three-staged maturation drama by which God educated man in time through infancy, youth and maturity began to be used increasingly by Christian Anglicans as a tool against Deism's claim of an eternalist order (Crane 349-82). Towards the end of the eighteenth century in Germany, Gotthold Lessing, in his *The Education of the Human Race* offered a closely related triple scheme, arguing for the historic education of the human race in three stages (qtd. in Baumer 200). And one of the "most important formulations" of a "trinitarian structure of history," according to Mark Taylor, "was developed in the systematic philosophy of the nineteenth-century philosopher G. W. F. Hegel. For Hegel, the doctrine of the Trinity revealed not only the structure of history but of all reality" (3). It was Auguste Comte, however, who played a signal role in secularizing the triadic human

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drama. The founder of positivism, and a preeminent exponent of the idea of progress, Comte envisioned history in terms of a preliminary theological stage, followed by a second metaphysical stage, and a final "mature" stage of scientific reason — all governed by inevitable laws of secular progress towards an earthly Paradise (Russell 275). Thus the original, essentially cyclical human drama gradually became replaced by straightforward linear advance through sequential stages.

Our inventory of triadic interpretations of reality moves in the twentieth century inward from the realm of history to psychology. Freud, for example, projected an internal drama with three protagonists, the primal instinctual "id," the reality-making "ego," and the controlling "super-ego." The concept of an evolved psychological construction is also central to Jean Piaget's genetic psychology. In the latter, the child grows cognitively as the result of a progressive, and essentially triple organization of intelligence. The first stage of sensorimotor coordination is followed by a second stage, involving "concrete operations" (organization according to number, class, and quantity) and a third "formal operations stage" (systematically, abstractly coordinating earlier principles of classification) (Furth 217-8). According to Piaget, every child undergoes a history of these self-regulating operations, resulting in continually more sophisticated logical reasoning.

IV

These structuring activities can be broken down into the following major modes. The first, linear or analytical mode, involves the logical dividing of the continuum of existence into linear patterns equal to temporal consciousness itself: past, present and future, with its incumbent logical causality — "then" is followed by (or causes) "now," which is followed by (or causes) "next" (Baker 23). The triad, as Aristotle says, is an expression of temporality. The human development of hindsight and foresight, which provides us with a sense of past (memory), present, and future (anticipation), is essential to this linear logic. Historical consciousness is the hallmark of the analytical; the logical temporal triads of Aristotle, Augustine and especially later eighteenth- and nineteenth-century historicists are reflected in this mode.

A second, organic or mythic mode, reflects the fundamental act

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of human identity-making through the self's necessary transactions with "other" (family, society, tribe) to form a third fused entity. Unlike linear logic which cuts up reality, dividing and reintegrating it into causal sequences, this mode gathers opposites together into new wholes. Mythic atemporality is the hallmark of this activity, and instead of linear motion, cyclical movement dominates (as in separation-initiation-return). Mythic unions, such as in Shiva, and the rites of passage pattern, are reflected in this mode.

The organic and analytical modes are part, I believe, of a larger, three-staged mental framework. This "evolutionary" one, is rooted in the development of three internal stages within human consciousness itself. We see it reflected in the primitive "three-souls" concept, in the traditional three-levelled moral Pythagorean/Platonic systems, in the "three estates" concept, in recent psychological and cognitive theories, and, of course in Oppenheimer's mystical-moral-technological projections.

In the first myth state of human thought ritualized actions, emotions, dream-like imagining dominate. Myth story ("Vishnu") epitomizes such a state. In the epistemological-social transformations leading to a second, more historical rational state, metaphoric language and moral drama dominate. This cognition operates *both organically and analytically*, combining mythic thinking with linear processing. Metaphoric drama ("knowing sin") epitomizes this state. A third and final, rational-technical consciousness results in the dominance of abstract numerical-linguistic language, and a scientific ethos. Measurement (A-bomb technology) epitomizes this state.

The development of linear thinking in the progression of the three consciousness states is essential. In an article recently published in *Mankind Quarterly* (1992) I traced how symbolic clues to human culture could be found found in the merger of "line" and "labyrinth" (337-58). The major story of the Greek world which dramatized the beginnings of this merger was the "thread" or "line" Theseus used to wind his way through the Minoan labyrinth. This line represented "linear logic" (the step-by-step sequential causality developed in Western rationalism and science) interpenetrating previous mythic thoughtways. Linear logic develops through such interpenetration in three stages. First there is "prima-consciousness," an organic mode, made up of concrete, dreamlike, magical thinking in which there is little linear, logically analytical processing. In this myth state, mankind

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operates in a largely undifferentiated matrix of self and other. Secondly, there is "metaconsciousness," in which the mythic and rational merge in a way that Werner Jaeger saw happening in Homer: ". . . Yet it is hardly possible to separate 'mythical thinking' in the epic from the rational ideas with which it is interpenetrated" (Jaeger 151). Lastly, there is "techniconsciousness," in which analytical, differentiating linear logic ushered in our Western scientific lifeways.

This third stage not only replaced mythic atemporality (Shiva) but also metaphoric temporality (St. Augustine's drama) with the secular progressivists' belief in the linear march of history through scientific rationalism (Comte). In fact, the three consciousness states are never simply divisible into clear-cut, autonomous entities; rather they tend to be merged in interdependent systems of reactions, with a dominating element. Within the complex evolutionary progressions of states can be found an explanatory pattern of human symbol-making: a) techniconsciousness, dominated by measure, sign and machine, is elaborated out of b) metaconsciousness, and metaphor, symbol and drama, which earlier arose out of c) primaconsciousness, and myth, concrete symbol and magic. A growing differentiation of the self from mediated presentations occurs so that the latter become less engaged by earlier levels of human consciousness, and turn into systems of abstract signs and concepts. In any society or individual the three levels coexist with symbolic mediation systems built up from earlier coordinations. Logical configurations are accordingly mixed, with a particular historical organization of knowledge mentally "set" according to newly developed configurations.

V

The human trinity concept offers, I would argue, new insight into such fundmental questions as the nature of knowledge, myth and cultural evolution. My basic premise is that consciousness is *constructed* developmentally, *in the individual, and historically — in a three tiered structuring.* In these last sections I will focus on the idea of knowledge as construction, and on the first primaconscious world of myth.

Alexander Luria, a Russian psychologist who pioneered studies of cultural differences in consciousness, posited two essential concepts: first, that psychological shifts occured in consciousness as

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the result of social-historical activities (10), and secondly that:

> Consciousness — the highest form of the reflection of reality is not given in advance, unchanging and passive, but shaped by activity and used by human beings to orient themselves to their environment, not only in adapting to cultures but in restructuring them. (qtd. in Restak 239)

In *The Brain: The Last Frontier*, Richard Restak quotes Luria's ideas with approval, and makes a general connection between Luria's historical developmentalism and the Piagetian vision of the child's developmental constructions (238-9).

Is it possible that just as the child in Piagetian constructions moves from an undifferentiated matrix through early sensorimotor concrete representations to more formal analytical operations, mankind also developed from an initially less differentiated world of knower and object? I believe this to be the case. The Piagetian notion of individual cognitive evolution contains many sugestive analogies to our idea of the evolving dominance of linear differentiated thinking, and also, I think, clarifies myth's position in the spectrum of human cognition.

Myth, in my view, should be seen as the first of three stages of mankind's constructed cognitive-social transactions with the world of objects. The philospher Suzanne Langer and the anthropologist Clifford Geertz have shown how dream-like imaging and acting out qualities in primitive ceremonies are at the core of myth-making (Dinnage 37). But how cognitively do these elements fit into the cultural evolution of thought? We approach this question first through the representative example of an American Indian tribe's ceremonial transaction with the sun — the Zuni's famous Shalako initiation rituals which coincide with the winter solstice. Anna Dooling describes how these are designed to entice the sun to return through a set of miming performances, centered on a bird-like figure:

> Towering over them all is the magnificient figure of the Shalako, a 10-foot-high bird creature incorporating a snapping beak, layers of colorful blankets, a tail of streaming horse hair, dangling rabbit skins and a crest of eagle feathers. . . .
>
> At an unseen signal, the Shalako dancer arises, assumes the

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> giant mask, and begins to execute a simple repetitive patter up and down the dirt floor. Two men alternate the task of dancing beneath the mask, clacking with concealed strings the long beak of the birdlike Shalako, and rolling its terrifying eyes. The effect is hypnotic. (51)

Things in this graphic world clearly are not presented as objects of observation, but as symbolic models of transaction. The ceremony is meant not for spectatorship but for an active "re-presentation" of the primal forces of nature, which are dramatized in vivid networks of associations and analogies. Just as the child, as we shall see, relies initially on sensorimotor-concrete representations ("symbols") to build up a world of knowledge, the primitive mind relies on visual-kinesthetic action, and memorable imitative patterns.

At the end of the dance, more symbolic impersonating takes place:

> Dancing continues in the houses until almost dawn, and as daylight breaks over the pueblo, the rain priest of the north climbs to the roof of one of the dwellings and greets the new day with an litany of chants. At noon the Shalako reassemble near the river and run a series of races to plant prayer sticks in the ground — a symbolic reenactment of their role as couriers of the gods. (51)

To know in this world is to recreate ancestral animal-human actions. Impersonation is key, and "katchinas" ("sacred personage") dolls as well as masks are employed to aid the process. Furthermore, the diversity of the story's events are made coherent by the ritualistic use of a script. If the exact actions are not carried out, there is disaster, for such scripts offer, as Daniel O'Keefe explains, "a core of certainty to collective experience" (75).

Mythic knowing, then, involves ritualized sensorimotor modelling, i. e., thought is realized by a "re-doing," a play-imitation construction in a web of life-giving communal identity. Major motifs in the Zuni rite are basic to all mythic activity: presentation of the storied actions of supernatural spirits, graphic presentations of sacred objects and events, all embedded in an initiation situation. What are the cognitive-social forces that explain such primitive symbol-making? Why is it always made of the stuff of images, imitative gestures,

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play-like ritual representations and actions? Why is it grounded in human intention and wishes, and devoted to educating the young mind? Solon Kimball notes how "study of initation ceremonies holds implication for learning theory, that have yet to be explored" (x). Our exploration takes us to the child's world of thinking as set forth by Piaget.

VII

For Piaget human intelligence evolves by constructing schemas of knowledge derived from adaptive functioning. This involves a complex balancing between play-like "assimilation" and imitation-like "accommodation." The organism assimilates to its schemas the particular things it encounters and conversely accomodates the schemas to external data. In this process, reality itself is constructed from an undifferentiated organism-in-environment state. It is constructed by the child in its first play-imitation actions, which help distinquish its inner world of self from the external world of objects. The three main stages of intellectual development in Piaget consists of first, the sensorimotor stage, secondly, the concrete operations stage when the child begins to objectify reality, and uses such logical functions as numbering, seriation and classifications, and thirdly, the formal operations stage. In the second stage, operations are still focused on concrete representations ("motivated" signifiers or "symbols") rather than on abstract formal operations (arbitary signifiers or "signs"). One of the hallmarks of childhood is the world of play,which in Piaget becomes not simply the medium of fantasies, but the exercising of inward schemas for "acquiring thereby a feeling of virtuosity or power" *(Play,* 89).Play progresses in stages to become a "ludic" symbol, thatis, a *conscious symbolic activity done for the sake of knowing* (93-7). An example is the child's pretending to sleep (putting his head momentarily on a pillow), instead of, as in earlier sensorimotor activities, i.e., actually sleeping. Such "pretending" activity leads to the testing out of schemas, and the ritualized re-enactment of them. A final aspect of the child's symbolic play is the use of "substitutes" that figurally or analogically represent the original model in some way (e.g. cloth for pillow) (97).

Equally essential to Piagetian thought is the idea of imitation and its close relation to sensorimotor activity. Here imitation is

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actually seen as the agency of all image-making: "the mental image or symbolic representation thus comes into being as the product of the function of more or less exact imitation" (84). The image for Piaget is not a continuation of perception but is derived from an *internalizing of imitation*. Physical reenactment through visible gestures leads to what Piaget calls "interiorized imitation" and to the increasingly internal constructions of images. *Thus motorimitative actions, transforming themselves from "representations in action" to deferred, interior images constitute the source of all theoretical knowing, ritual and art.* The image only becomes separated from action in later, developed interiorizations; during the latter stages, the child no longer depends on the actual presence of a model, and instead becomes capable of internally reenacting absent models.

The tribal actions of the Zuni function, I think, as "representations in action" meant to trigger already internalized schemas. *In myth the mental schema are still tied closely to sensorimotor imitation.* These schemas are assured of strong internal reenactment and storage by the hypnotic rhythms and riveting masks which provide sensorimotor cues. The masks are not mere wishful magic; they are figurative *learning* devices (just as dolls, puppets, toys, etc. are to the child), prompting the construction of appropriate maturation strategies (acting as the ancestor successfully did.) Gestures, images and words set up a "script" agreed upon by all participants to recreate these "saving" concrete symbolic messages. Such imaginative projectings, mixing inner psychological needs with the beginnings of objectified representation, become in the course of historical development tested in more abstract linguisticnumerical networks of meaning, as the inner imaginary pole is continually separated from the external objective pole. In time mythic schema are transformed into metaphoric-rational representations where symbols are still tied to the sensory but also partake of the analytical processes of "sign" thinking. This "second act" in the differentiation drama, in which humans construct reality *combines symbols and signs*, gradually yields to a "third act"in which these combined symbol-sign representations become "reprogrammed" into a numerically-dominated sign world of operations. From Lascaux Cave to modern "Computersville" can be traced a compelling mental voyage from global sensorimotor-symbolic representations to increasingly differentiated signs. It must be pointed out that in Piaget's system of knowing, symbols tend to be necessary

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only in so far as they lead to logical operations, and thus "mature" knowing by implication requires moving away from symbol-dominated, emotional knowledge. Image and symbol, in other words, comprise a "motivated" cognition which is designed to be transformed into a kind of algebra of knowledge and behavior. Myth, art and all the domains of religious, aesthetic man tend in a real sense to be left behind in Piaget's logicism. While I believe the play-imitation modeling theory of Piaget is a key to understanding mythic thought, the persistence of early symbolic processing seems to me vital to the functioning of human culture. That functioning demands figurative thinking, ritual action and personalist sense of language as much as measurement and logical reasoning. In concluding, we turn to a final and earliest historical example of the first constructed stage of consciousnesses.

VIII

In *The Roots of Civilization,* Alexander Marshack parallels the mental development of Upper Paleolithic man to Neolithic Man to the development of the child as envisioned by Piaget:

> Time and space had begun to be divided and extended in increasingly complex human terms, and interrelations among men were involved with these time-space structures and mythologies. . . . As we saw in connection with Piaget's research, there are stages in cognitive development and in the development of the capacity for logical and symbolic thinking. The individual gradually enlarged his "rational" capacity to see process within an object or symbol, to process in the end product, to recognize a sequence of steps or transformations, and finally to communicate these through the use of stories and symbols. (374-5)

What happened to create this enlarged "rational capacity" was, I believe, that linear thinking — "process". . . sequence of steps" — was called out by new cultural challenges to the primaconscious mental set. In the latter, a type of linear logic assuredly existed, as Marshack shows through innumerable examples of calendric linear notations found on Ice Age bones, but abstract conceptual thought was still largely minor in the "motivated cognition" of cave art symbols. The

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latter were built around a primaconscious "script", typically embroidered with multisensory images of animals, bird-like masks, fertility goddesses, male and female markings or signals. (Campbell, *Atlas* 64-5) The cave chambers in which the paintings were found were, as John Pfeiffer points out, "sanctuaries," and the images in them part of a "initiatory trial in the terrifying and remote depths of the underground world, . . " (qtd. in Zweig 18).

I believe Ice-Age man, like the Zuni, constructed a first world of knowledge by internalizing powerful images of sensorimotor action. The artists's drawings were "representations in action," fostering "deferred, interior images" of fertility and communal identity. Cognitive "assimilation" through figurative and analogical associations is suggested by Leroi-Gourhan who, in commenting on a barbed stick and falling entrails in the Lascaux "Shaft" iconography, wonders if the female marking may be "a variant of the assimilation of phallus-to-spear and vulva-to wound," and the male marking might "imply an assimilation of phallus-to-spear-thrower" (316). Such primaconscious image-making, as I have argued previously (337-58), became transmitted throughout Old European cult objects directly into Minoan culture, acting as a persistent scenario of memory cues for primaconscious cognitive responses.

New "time-space structures and mythologies" arose in Mesopotamia, Egypt, and Greece when primaconsciousness awoke to more linear articulation. A subtle cognitive shift to more formal conceptual sign operations is in evidence in a new time and numbering sensibility in an epic like *Gilgamesh*. There the hero says to Enkidu:

> Only the gods d(well) forever with Shamash.
> But for mankind, their days are numbered" (McNeill 5. 4. 141-2).

This temporal reflectiveness on man's linear existence mirrors something novel in the atemporal world of myth. With it, self-consciousness, individuation and the beginnings of analytical thought begin to seep into the organic realm of primaconsciousness.

The emphasis on ethical choice and rationalism insucceeding cultures, especially in the Greek world accelerated new metaconscious constructions. The metaphor oflife as an onward spiritual drama (fusing concrete representations with linear conceptual ones) epitomized such thinking throughout the early and middle ages of

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Christianity up through the late Renaissance. But how, then,did the emergence of a new mathematical vision of nature — epitomized in the image of the clock world — become so all-encompassing in post-Renaissance Europe? It was the result of new cognitive urges to restructure the world in terms of an abstract linear logic, *a logic which had already long been embedded in the three-tiered mind.* This was accomplished in large part through an intricate "representation" of time and process, stimulating man to see natureless in terms as a world drama animated by human and divinepurposes (the "motivated cognition" of symbols), and more as linear mathematical chain of causes. Such a shift can be glimpsed in Descartes's "Method:" "Those long chaines of reasoning," Descartes muses, "so simple and easy, which enabled the geometricians to reach the most difficult demonstrations, has made me wonder whether all things knowable to men might not fall into a similar logical sequence" (33). The nineteenth and twentieth centuries brought in a radical new activation of techniconscious capabilities, one which was increasingly favored in political and social transactions. The later tended to extend out into a technological collective brain embodied in twentieth-century multinational communication networks. Modern society has successfully bound man to man in continents of automated information systems not only in the multi-national commercial and political worlds but in the realm of human communication. Mankind, in my view, ideally belongs neither to the techniconscious collective machine world, nor to a mythicethnic-tribal world, but to one where the three consciousnesses can be integrated in a responsible, free, and caring personality.

To sum up: mental life is a part of mankind's on-going triple constructing of reality, involving societal and psychological pressures towards more cognitive formalization and in the last three-hundred years towards an inexorable technological vision of reality. The search for a full human response requires that we chart the points at which new mental sets infiltrate the symbolic world of valued perception, for both good and bad. It is our freedom to choose to or not to abide with the techniconscious world, but in any further adaptation we will have to be aware of where we are and how we have moved through these three master cognitive-cultural patterns.

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Charting Conceptual Space: Dumézil's Tripartition and the Fatal Hostel in Early Irish Literature

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In a 1992 study, Dean Miller summarized the criticism levelled in recent years at the tripartite organization of the Indo-European thought-world as elaborated by Georges Dumézil. A trifunctional conception of early society was Dumézil's central structural unit, although this triplicity was extended through a wide range of homologies: cosmic equivalents (e.g., sky, earth and sea), body parts (head, torso/arms, lower body/legs), faults or sins specific to each function, and so on. Critics have claimed, firstly, that categorization by threes is an option universally employed by the human cognitive process and subsequently in the mental archive, secondly, that the methodologies and conclusions of Indo-European historical linguistics have been indefensibly put to organize and explain a very different body of evidence, and, thirdly, that some of the testimony of the Indo-European heritage is resistant to subsequent tripartition. This said, Miller seeks to make a further refinement to Dumézilian theory in the areas of a possible fourth function and the double valence or polarity exhibited in certain expressions of one or other of the three functions.

Whether the theory of trifunctionality is utilized primarily as a heuristic tool for approaching what is largely a literate and medieval body of evidence with the synchronic, essentially descriptive objective of accounting for as much as possible of its structure and detail, or has the diachronic goal of conclusively proving that a culture sufficiently cohesive to warrant the name Indo-European had such a specifically contoured world-view, it is worth recognizing the nature of the underlying metaphors that inform our terminology. Broadly speaking, scholars who have employed Dumézil's concepts have focused either on individual functions, the division into three (distinctiveness), or on the interaction of functions (opposition or

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complementarity). At the risk of over-simplification, these might be characterized as relying on spatial and relational metaphors, respectively. As the postulated Indo-European parent society was both hierarchical and sky-oriented in its vision of the divine, it was an easy step to represent this society, in its social stratification and relative numbers per function, as a pyramid, with a numerically small elite of rulers, law-givers, and priests at the top, a larger body of warriors next, then the numerically dominant third function of providers, herdsmen, farmers, hunters, etc., at the societal base. The generally aristocratic and martial nature of much of the surviving evidence permitted closer anatomical study of functions one and two than of the less sharply contoured third. But even here, in the sphere of the Divine Twins, one bellicose and one pacific brother could often be distinguished (Ward 1968 and 1974). This polarity is seen under greater tension in the oft-cited case of the Norse hero Starkaðr, manipulated in turn by the gods Óðinn and Þórr so that the would-be conventional hero is drawn into committing three crimes against the warrior ethos (Dumézil 1969, Polomé 1990). It was, however, in the first function of rulership, law and sacrality in its Iranian and Indic expressions, that Dumézil (1948) initially called attention to such bipolarity, personified in the law-giver Mithra and the magician Varuṇa.

This is Miller's starting point. On the model of Needham's (1973) cataloguing of the concepts of right and left in dual symbolic classification, Miller puts Varuṇa and Óðinn under the sign of the left hand, Mithra and Þórr under the sign of the right. Before essaying a further refinement, he passes in brief review Allen's (1987) thesis of a fourth function, an idea earlier suggested by Rees and Rees (1961: 112ff.) in their study of Celtic tradition, in that specific instance against the comparative background of Indian tradition and its *sudra* class. Allen's fourth function is that of "what is other, beyond or outside ...forces alien to order ... the uncanny, mysterious, otherworldly and paradoxical" (28f.). Recalling the above suggested objective of accounting for all the evidence, a hasty criticism here might be that the fourth function seems to have been invented to bring into the conceptual fold all the stray testimony not accommodated elsewhere. But such rejection out of hand would be premature. Anticipating, as it were, the superficial distinction between spatial and relational metaphors, and critical approaches, Allen went on to characterize this fourth function as "more abstract than the others ... not self-sufficient but relational" (34).

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Miller's synthetic venture is to bring many of the representatives of Allen's fourth function (but not the artisans and, particularly, the smith) into the three canonical functions but distributed at precise locations along each of the three axes that run between left and right, between Varuṇa and Mithra. His conceptual grid, here shorn of its specific examples from myth or epic but augmented by a functional marker operative in one of three ways, is as follows:

Function and Marker	**Left Hand**	**Combinatory, Interstitial**	**Right Hand**
1 Time	Varunaic King uncontrolled	Magical King controlled	Mitraic King delimited
2 Act	Othinn warrior uncontrolled	"Doubled" warrior controlled	Thorr warrior delimited
3 Space	Merchant uncontrolled	Herdsman, Shepherd controlled	Farmer delimited

Miller makes no claim that his function marker, which he qualifies as only "*relatively* dominant", was part of any original I-E conception and, indeed, those markers he has attached to functions 1 and 3 are less well rooted in the evidence than is that of function 2. For example, the warrior's 'eternal glory' is surely a temporal concept, and mass and volume might better characterize function 3 than the space they occupy. But in the spirit of honing our critical tools, alternatives are offered to these markers, while profit is also drawn from Miller's three operative codes (uncontrolled, controlled, delimited).

The model proposed here is intended to incorporate Miller's combinatory, interstitial category between left and right hand, and Allen's anomalous evidence, with attention to its characterization as "forces alien to order", but without establishing a fourth function. It is desirable to formulate a model that allows greater flexibility than static, absolute categorization in order to locate a character in relation to more than a single reference point. The three-dimensional construct given in the accompanying figure encourages plotting the course of character or story development in a given work,

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or epic or mythological corpus (see *infra* for an example). It also facilitates the mapping of what Dumézil called functional displacements, for instance, in Scandinavian mythology the apparent move of Óðinn into the sphere of war, of Þórr into the sphere of fertility. This spatial metaphor retains several conventional attributes: i) the globe represents incorporation and inclusivity as opposed to partition; ii) the size of the horizontal strata represent relative numbers and, in the case of function 3 at least, the number of sub-functions; iii) the vertical axis signals hierarchy, and position on it proximity to the divine; and, rather more speculatively, (iv) this same axis is also the *axis mundi* which, in homological miniature at least, can be located anywhere in the here and now, but preferentially where *ego* stands, god, hero or their worshipper or witness.

Rather than utilizing Left and Right, classical notions of Nature and Culture (N and C) are retained, with two important qualifiers: firstly, culture represents man-made order, whereas nature, representative of a different order beyond human manipulation, always has the potential to invade, to reintroduce contingency and reduce human order to chaos; secondly, while nature may be viewed as threatening (as well as under other circumstances beneficent, 'smiling nature'), its legitimacy is no less than that of culture. Conversely, humankind's very success, however limited, is proof that the powers of legitimate culture are similarly not negligible. In many narrative contexts, nature and culture will find human expression in female and male agents (Herbert 1992a). Miller's "interstitial" area is extended in both depth and breadth, but retains his notion of "combinatory" to create a zone of successful coalescence, where the character at the critical focus can be judged to have successfully mediated between the force-fields of culture and nature, to have recognized and respected their necessary complementarity. But this is not only successful mediation (coded M), it is also normative mediation in that it conforms to societal rules and so deserves forestage placement in the conceptual theatre.

Much of medieval literature gives a strong impression of the importance of the norm in these cultures, where life was a far from assured matter. Whether it is the *hóf* ('moderation') of the Icelandic saga hero, like Gunnarr of *Njáls saga* before escalating events 'pull him out of bounds', or the *fír* ('truth') and thus just rule of the Irish king, like Conaire Mór until partiality before the law led him to the multiple infraction of tabu (*geis*), the hero living within the checks and balances of his society is the ideal. Much of myth and story lies,

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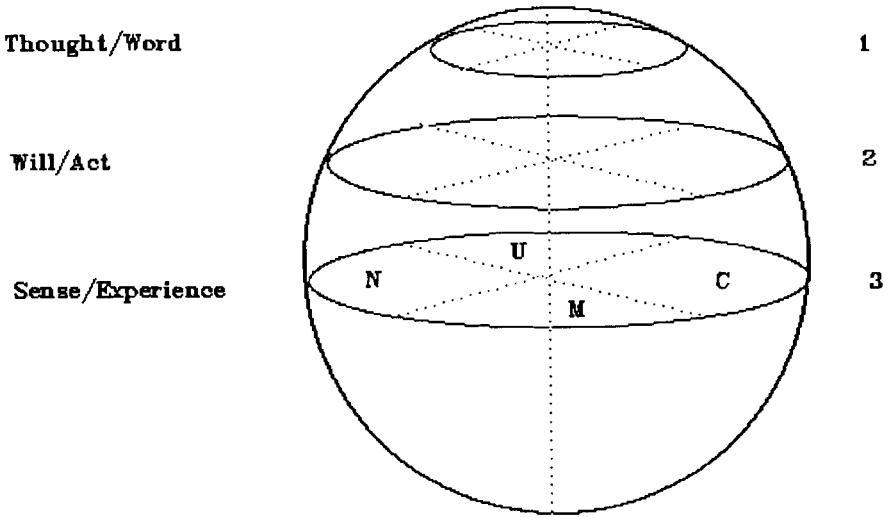

An elaboration on Dumézil's conception of Indo-European trifunctionality (1 Rulership, Law, Sacrality, 2 Martial activity, 3 Fertility, Abundance), where each level is assigned a function marker (Thought/Word, etc.) and is organized into quadrants of orientation (Culture, Nature) and modality (Mediated, Unmediated).

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however, in failure to live up to the ideals of the norm or wilful divergence from them. A darker domain, 'back' of Miller's combinatory zone, is then home to many of Allen's fourth function representatives, although it is hoped that it escapes the label of catch-all. Despite the lack of taxonomical rigor, this quadrant is labelled U, for Unmediated, Unresolved, Unexclusive, or Unacceptable as seen from the conventional human societal perspective. This is not to say that non-normative representatives of these quarters necessarily lack integrity; here are situated, for example, a) the feared poet of praise and blame, capable of awarding immortality as hero or coward, munificent ruler or niggard; b) the smith, working in filth but generating through magical metamorphosis the essentials of the warrior; c) performers in the arts such as music who abstain from the emotional engagement their work may inspire. But here, too, are to be found the grotesque, the trickster, the outlaw, and the criminal king, wielder of excessive and thus illegitimate power drawn from any of the functions (what Miller has elsewhere called "functional hypertrophy").

On occasion motifs appropriately located in this zone are associated in a cluster. In the Icelandic *Eyrbyggja saga* (a work cited by Miller) Chapters 18-20 offer interrelated instances of gender ambiguity (Þórarinn and his wife Auðr), public mockery, black magic and the killing of sorcerers (Oddr and his mother Katla), self-congratulatory poetry (Þórarinn), ethnic slurs and battlefield panic (Nagli the Scot), and the typical behavior of slaves, i.e., fear and flight (Sayers 1994a).

Miller's conception of functional markers is employed, but assigned to functions 1 through 3 are the following pairs, where the first element represents potency, the second realization: Thought/Word, Will/Act, Sense/Experience. Divine *logos*, just judgments, and other operative pronouncements where speech acts change the consequent world are housed in the first category, and illustrations follow below. It is also hoped that the second category can be readily accepted as a working assumption. Category three, sense/experience, calls for a brief theoretical excursus.

It will be useful to add a volitional dimension to the conventional conception of the three functions. A cue is found in the Irish notion, illustrated in the *Cambrai Homily*, of three colour-coded Christian martyrdoms: white martyrdom is exile, red martyrdom is the physical ordeal conventionally associated with death for the faith, the 'green' martyrdom (only an approximate translation of the early Irish

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language's *glas*, where chromatic boundaries lay elsewhere than in English) is penance.[1] These three martyrdoms are a) the self-imposed exile of the Irish anchorite or missionary, which put him beyond the supportive environment not only of family and language but more importantly of tribal law, b) the heroic embrace of pain and death in the imitation of Christ, and c) the passive endurance of physical and psychological penalty imposed from without (Latin *patior* captures the sense here). On the larger scale it is contended that members of the third function live out destinies patterned by seasonal time and by social and economic structures in which acts of will play a limited role. Not that appetites go unsatisfied, for this is the domain of somatic life, but an absence of volitional initiative distinguishes this group. Thus, the freeman farmer is placed in the mediated quadrant, the slave (perhaps a freeman before capture in battle) in the unmediated quadrant.

The usefulness of this model can now be tested in a review of the biography of the legendary Irish king Conaire Mór mac Eterscéle, whom Miller categorizes as a "god-king, perfect king" in contrast to the interstitial Bres of *Cath Maige Tuired* (*The Second Battle of Mag Tuired*), who is a "taboo-violator, reverser", and right-hand Cormac mac Airt, a "law-king". The central text here is *Togail Bruidne Da Derga* (*The Destruction of Da Derga's Hostel*); the hostel of the title will also serve as reference point in the second part of this study in the exploration of a kind of conceptual space different from that of the hierarchized model of the three functions.[2] To avoid lengthy comment, events, uni-dimensional characters and specific movements or stages in the heroic biography and general story line are assigned parenthetical locators indicating functional level and quadrant, thus 3-U.

There are some breaks or inconsistencies in the account of Conaire's ancestry, but the main lines are clear. Étaín from the *síd* (conventionally called 'fairy-mound' or Otherworld, but see *infra*) recalls the fair face of the Irish goddess of territorial sovereignty (1-N) but here confers supernatural legitimacy on a royal blood-line rather than on an individual.[3] She displays her beauty to the king Eochaid Feidlech (1-C) in order to seduce him and give him a daughter, while also claiming her legitimate bride-price (3-C).[4] The king dies. Étaín's daughter is taken in marriage by King Cormac (Cormac Cond Longas, son of Conchobar?) but proves barren (3-U)

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and is apparently dismissed by the king, until her mother prepares special food, after which she, too, has a daughter. The wife is taken back by the king (unless it is another marriage that is contracted), but it is his intention that the daughter be exposed (3-U). In the familiar turn, her would-be executioners take pity on the smiling child and she is sequestered in a herdsmen's hut in the forest (3-N), doorless but provided with a skylight (3-U). The beautiful child, called Mess Buachalla 'Herdsman's Fosterling' and having acquired such skills of culture as needlework, is discovered by the men of King Eterscéle who undertakes to destroy the refuge and take the child by force as his wife (3-U), since it had been prophesied that a woman of another race would bear him the child he had previously sought in vain. But a supernatural visitor enters the hut through the roof, divests himself of his bird's headdress (1-N), and, warning the girl of her impending fate, fathers on her a child that will be recognized as the king's son. He lays on this child the tabu (*geis*) that he not hunt birds. Additional *gessi*, which in this tale are laid on the individual rather than attached to an office (Dillon 1951), will follow. Events thus far conform to the pattern of exceptionalities accompanying conception and birth that figure in the model of the heroic and regal/heroic biography, but with distinctive Irish features (Ó Cathasaigh 1977, 1978, Ó Buachalla 1989): matriliny is given prominence in an ancestry that is both divine (male and female lines) and human; several generations are implicated, with Étaín perhaps being twice reincarnated as her own daughter and granddaughter; the threatened childhood and upbringing in humble circumstances are particular to the mother rather than to the hero son. There is some evidence to suggest that she may have been the offspring of an incestuous union, thus further 'marking' the son. The polyfunctionality that characterizes the most successful legendary Irish kings such as the future Conaire is thus prepared by exposure to both the normative and the non-normative, both the cultural and the natural dimensions of the third function. In a sense the path to the kingship is from the rear (1-U), as successive kings are beguiled (Eochaid), duped (Cormac, by the child born of magic food), and tempted into coercive action and cuckolded, before being called on to raise another's son (Eterscéle).

Like Étaín, Mess Buachalla insists on the formal legalities of marriage; among the rights she claims for herself and her child are several with strong ties to the third function, e.g., continuing partial fosterage by her fosterers, the herdsmen, as well as by noblemen and

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by herself. Conaire is raised as a king's son and has three noble foster-brothers. When the king dies, a vatic ceremony is prepared (gorging on bull's meat and broth prior to sleep and dreams) to identify his successor. Conaire, who has left his foster-brothers on the playing field, is drawn by birds to the sea-shore where a representative of his avian father appears and instructs him on how to 'stage himself' in order to meet the criteria of the seer's dream. The kingship is to be approached from the quarter of nature and the anomalous. Conaire duly goes naked and on foot on the road to Tara at day-break (3-U), with a stone in his sling (elemental martial activity, perhaps 2-N). His coming is awaiting by three kings on each of four roads (see *infra*), who clothe him appropriately. Despite misgivings over his beardless youth (a last exceptionality), Conaire is recognized as the royal successor and assumes the kingship. His reign is marked by success in all three functions: wisdom, justice (and, one assumes, correct sacral observances, although these manuscript redactions dating from Christian times exclude all pagan cultic detail), security (the consequence of effective military defence) and--itemized in greatest detail--all the signs of the bountiful kingdom: fine weather, fertile stock, plentiful harvests, societal peace (men's voices as sweet as harp music).

As a lawgiver and protector of internal security (but also in accord with one of his *gessi*), Conaire bans the customary domestic raiding that appears to have been, in historical Ireland as well, a prerogative of temporarily societally marginalized young warriors on the verge of adulthood (*fíanna, díberga*).[5] This rankles the king's foster-brothers who provocatively continue to plunder on a small but symbolically significant scale. Conaire's emotional tie (3-N) to his foster-brothers and the shared martial ethos (2-C) are to prove his undoing. First, he makes an excessively rigorous but partial judgment that all raiders save his foster-brothers be killed (1-U), then relents and orders them into exile. The king is acutely aware of his transgression (the shift in function marker from thought to word) and its inevitable consequences: 'No lengthening of life the judgment I have given' (*ní haurchor saegail damsa in breath ron-ucus*, ll. 216f.). The quality of royal justice was fundamental to the continuing legitimacy of rule (1) as well as to society's safety (2) and material prosperity (3). Conaire's downfall is initiated when the cosmic rules of chance are suspended (N) and he is led either unknowingly or

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through the counter-claims of other pre- and pro-scriptions to violate all the apparently unrelated collection of *gessi* that the bird emissary had revealed to him. Conaire's initial sin in the sphere of choice (judgment) is then followed by infractions in the sphere of sacral restriction on freedom of choice (*geis*). Some of the *gessi* have territorial imperatives, e.g., not to go right around Tara, nor left around Breg. Others seem even more arbitrary: not to be preceded by three Reds to the house of a Red, not to admit a solitary man or woman to his house after nightfall, not to let its firelight be seen from outside.[6]

Then appear the first harbingers of Conaire's destiny as he makes his way to the Hostel of Da Derga (< *derg* 'red', while *Da* may derive from *dia* 'god'; more likely the name has been recast on that of another tale and the original host's name was *Ua Dergae*, open to interpretation as 'descendant of the red [female]', i.e., goddess). Fire and plunder have overtaken the land, although this may be a staged optical illusion. On the scene, too, are the red men of the tabu, dressed in red, on red horses. They cannot be overtaken nor will they be stayed in their advance (2-N), but prophesy over their shoulder a king's destruction.[7] Other apparitions are a hideous hag, whom the informed listener would recognize as the sovereignty goddess in her role as prophetess of the failed king's death (failure in 1 announced through the medium of 3).[8] She is accompanied by a huge, ugly churl carrying a singed, squealing pig. His name is Fer Cailli 'Man of the Forest' (another of whose guises as Nature's representative is Lord of the Animals).[9] Both beef and fresh and salted pork were served in the royal banquet halls, but pigs seem to have carried chthonic associations in certain circumstances, and are then consonant elements in the fatal feast.

The darker face of the goddess appears again later in the tale, when Conaire has reached the hostel. She is described as grotesquely ugly, with similes drawn from the artisanal sphere ("shins long as a weaver's beam"), but her gross female sexuality is also highlighted. One telling characteristic is the wry mouth on the side of her head (*a beóil for leith a cind*, ll. 540f.). *Cláen* 'crooked, skewed; biased, partial', albeit not used here, was a central metaphor in comment on royal justice, as in the Cormac story when Lugaid's erroneous judgment causes one side of the fortress to fall and result in *cláenferta* 'crooked trenches'. Crooked, too, is in the nature of a spatial metaphor, and is the opposite of the 'true', both veridicity and the trueness of the mason's plumb-line.[10] The goddess was silent on

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their first meeting and was identified by her man, Fer Cailli, with the name *Cichuil*, perhaps 'teated one' or 'many teated'. When she appears at the hostel, she leans against the doorpost, the liminal point; this was apparently part of a recognized procedure (see *infra*), for Conaire immediately interrogates her as possessing knowledge. The scene is openly confrontational, antagonistic. As such male-female dialogue is relatively rare in medieval European literature, it is worth reproducing (Irish text in the notes). The ironic dimension is that while Conaire may recognize Cichuil as a seeress, he does not see her as a supernatural being. He then speaks as he would to a mortal woman, his inferior in terms of both sex and station. She speaks from a position of power and foreknowledge, and is not above taunting the king, the wry mouth finally speaking.[11]

'Well, woman, what do you see for us since you are a seeress?' 'Indeed, I see for you yourself,' she said, 'that neither bump (bone) nor flesh (= hide nor hair) of you will escape from the house into which you have come, save what the birds carry in their claws.' 'It was not an ill omen that we prophesied, woman,' he said. 'It is not you who usually prophesies for us. What is your name, woman?' 'Cailb', she said. 'Now, that is no surplus of names,' said Conaire. 'Hark (lo), many are my names besides,' she said. 'What are they?' said Conaire. 'Not difficult,' she said. 'Samain, Sinand, Seiscleand, Sodb, Saiglend, Samlocht, Caill, Coll, Díchoem, Díchuil, Díchim, Díchuimne, Díchuinne, Dairne, Dáirine, Der úaine, Égem, Agam, Ethamne, Gním, Cluichi, Cethardam, Nith, Nemain, Noenden, Badb, Blosc, Bloar, Huaet, Mede, Mod.' 'What is pleasing to you?' said Conaire. 'Whatever is pleasing to you, then,' she said. 'It is tabu for me,' said Conaire, 'to receive the company of a single woman after the setting of the sun.' 'Though it be tabu,' she said, 'I will not go until full hospitality comes to me this very night.' 'Tell her,' said Conaire, 'that an ox and a salted pig will be brought out to her along with my leavings, and let her stay in another place tonight.' 'If indeed it has come down to this for the king,' she said, 'about a meal and bed for one woman in his house, let something else be had from someone else who (still) has honor, if the hospitality of the prince who is in the hostel has come to an end.' 'Her answer is savage,' said Conaire. 'Let her in even though it is tabu for me'.[12]

With Conaire across the threshold into injustice and already guilty of sacral infractions (if one may so read the violated *gessi*), the

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dictates of honour and the obligation of hospitality, on which Cichuil skilfully plays, prevail over tabu. Standing back a moment from the narrative and recalling the model of the functions, one can see how Conaire rose through several quadrants of functions 3 and 2 to successful kingship (1-M), but then as a consequence of his unjust judgment (1-U) also violates the tabus that send him spiralling down through the functions.[13]

At this point it will be illustrative to address the question of the hostel (*bruiden*) which received Conaire; firstly, with a review of the Irish system of social ranking and attention to its physical expression, secondly, in consideration of the rather fragmentary evidence from other I-E derived cultures for the integral conception of the third function, to call attention to the particularly rich Irish evidence for materially prosperous landowners (*briugu*) under obligation to provide royal hospitality, and, thirdly, to move from the spatial metaphor of tripartition in order to consider a rather different kind of conceptual space, the organization of the hostels which they administered.[14]

Irish tradition offers a wealth of triplicate patterning on the level of detail that is susceptible to a Dumézilian interpretation, e.g., the insignia and instrumentation of the royal inauguration, faults/sins matched to the functions, or wounds and mutilations,[15] but also a social organization rather more complex than one structured by three essential functions. In fact, quite elaborate hierarchies are evident both within and among certain professions. There is absolute as well as relative rank: absolute in that there was a basic division into *sóernemed* ('free privileged') and *dóernemed* ('unfree privileged') and that nobles as a class ranked ahead of poets; relative in that both nobles and poets were divided into grades, the latter with appropriate subjects and styles for each, so that the first grade of poet might rank ahead of some grades of noble. The number of grades, often seven, may reflect Christian ecclesiastical organization, but the very pervasiveness of the practice suggests that it informed an earlier underlying concept of society. The following schematic is not accurate in points of detail, is limited to only a few vocations, and synthesizes in some of its headings. It is intended only to give an idea how a practitioner of one profession (seeing nobles as warriors) might relate to others in his social milieu and, more particularly, to indicate the relative status of hospitallers. It should be recalled that an even finer social mesh was created by the addition of relationships within the extended family, which spanned seven generations, and economic ties between patrons and clients of various kinds.

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Thus, the wealthiest hospitaller, whom one could consider a quintessentially third function representative, is seen to enjoy parity with some nobles and a ranking with leading figures in the more abstract domains of law, poetry and history. Circumstantial evidence from a narrative context is found in Cú Chulainn's birth-tale (*Compert Con Culaind*), when King Conchobar appoints as his fosterers an orator (and peace-maker), a warrior, a poet, and a hospitaller.[16]

Aristocracy	Religion	Law & Letters	Crafts & Hospitality	Performance
King				
Nobles - 1	Biblical Scholar	Chief Judge		
Nobles - 2		Chief Historian Chief Poet	Hospitaller	
Nobles - 3		Poet - 2	Mason	Harpist Athlete
Nobles - 4	Druid	Poet - 3		Flutist Chess Player
		Poet - 4		
		Poet - 5	Goldsmith Coppersmith	
		Poet - 6	Smith	
		Poet - 7	Physician	
			Shieldmaker	Hornplayer
		Storyteller	Carpenter	
			Cartwright	
		Satirist	Leatherworker	Juggler
				Fool

Irish legal texts closely define rank and privilege but also obligation and liability, and include the criteria of ownership and service by which various estates are legitimately judged. Thus the hospitaller was expected to own a hundredfold head of cattle, and according to some texts, one hundred of every other domestic animal.

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Land-holdings must have been proportionate, whether owned or rented. The *briugu* was legally obligated to dispense hospitality to all without counter-obligation, whatever the size of their retinue or the frequency of their visits, although liability for abuse might rest with the visiting party (*Esnada Tige Buchet - The Songs at Buchet's House)*. One legal tract stipulates that to maintain his station the hospitaller have "a never-dry cauldron, a dwelling on a public road, and a welcome for every face".[17] Just as the hosteller's status could be threatened by material inadequacies, the accumulation of wealth and the assumption of functional responsibilities may have been a means to rise socially from the *bóaire* class (Hiberno-English 'strong farmer').

Despite the relative prominence of hospitallers in various textual expressions of social ranking (law tracts, didactic lore), their role in the epic texts is largely limited to occasions when they act as relatively passive hosts (cf. the above suggested non-volitional character of the third function). They may create conditions conducive to contention, as when Mac Dathó invites to the same feast the men of both Connacht and Ulster, who have come to claim the same hound (*Scéla Mucce Meic Dathó*), or when Bricriu (not formally a hospitaller) flatters the Ulster heroes into vying with one another over precedence in his specially constructed banquet hall (*Fled Bricrend*), but the dynamics inside the hall and outside generally have origins in the political and personal tensions of the guests. In two tales, however, the presence of the host seems more ominous. These are the present text, *Togail Bruidne Da Derga,* and *Bruiden Da Choca*.[18] Similarities extend beyond the titles and compound names of the hospitallers, since both tales deal with the fate of kings. In *Bruiden Da Choca*, the royal guest is Cormac Cond Longas, son of Conchobar. In this tale, too, the sovereignty goddess appears in more than one guise; she makes, in fact, three telescoped appearances: firstly, as the Washer at the Ford, a red woman seen in the distance washing bloodied chariot gear in a stream whose water runs red when she lowers her hand but rises in the air with her lifted hand;[19] secondly, as the fair maiden who comes to take leave of the king who will die; the third hypostasis is as the hag, unnamed but similar to the one Conaire admits to the hostel. The focus of this study, however, will continue to be on *Togail Bruidne Da Derga* and the fate of Conaire Mór.

In approaching the question of the fatal hostel where Conaire will be received, reference may be made to the above schematic of selected social ranks. Although somewhat different in organization,

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this table is based on manuscript illustrations and accompanying poetry and prose (entitled *Suidigud Tigi Midchúarta - The Arrangement of the House of Mead-Circling*) that very fully and perhaps uniquely in medieval western European literature situate a wealth of social ranks not only in the three-dimensional space of the royal banquet hall by also by the appropriate cut of meat served to each.[20] Admittedly, spatial expressions of rank in the microcosm of the royal hall are common: high table and low table, above and below the salt, but the thoroughness of the Irish scheme is striking. The manuscript illustrations present four vertical columns naming up to fifty ranks and vocations, and fourteen cuts of meat. This replicates the layout of the royal hall, which may have been constructed as a timber frame with wattle-and-daub walls. It was oriented along an east-west axis (the directional points 'before' and 'behind' in early Irish). Next to the wall on the north (left-hand, when facing east) and south (right-hand) sides were series of semi-enclosed compartments called *imdae* (earlier *immid* < *imbith* 'being within'), mounted on relatively high daises (*ailad, taulach*). They contained couches for eating and sleeping, and some had pillars rising toward the roof. On the sides were partitions over which diners could view others in the hall. At the front of the compartment was a similar partition, perhaps with a door, called the *airenech* (*air-* 'before' + *enech* 'face'; *enech* was extended semantically to cover the concept of 'honour'), whose marking carried information on the status of those within. Between the two rows of *imdae* ran two similar rows of lower daises or platforms called *airide* (< *air-suide* 'sitting in front'). Joining the *imdae* and *airide* were one or more steps called *ordd*, which appears to derive from Latin *ordo* 'order, rank', but may have been influenced by *orddu* 'portion, joint, articulation' (cf. the expression *fo glún ríg* 'under the king's knee', used of guests seated on the *airide*). Parties appear to have paraded around the hall before entering an apartment and hanging their weapons on racks on the walls. Finally, along the centre-line of the hall were located lanterns, a hearth with roasting spits, a cauldron with boiled meats, and drinking vat. Food and drink would have been distributed in clockwise sequence ('mead-circling'), starting with the king.

The king's compartment was situated against the north wall toward the western end of the hall, while at the eastern end the *airide* broke off before reaching the doorway to leave a large open area

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broke off before reaching the doorway to leave a large open area called the *lár* or 'floor'. What is striking in the organization of the Irish hall is not only the height differential between *imdae* and their subjacent *airide* but also the fact that the *imdae* themselves created a tiered effect. The stepped dining loges seem to have dropped off rather sharply from the king's compartment toward the closed western end of the hall, where the king's steward *(rechtaire)*, who determined the rightful seat and portion of each guest (*recht* 'law'), carvers and spencers had their work stations. It descended more gradually toward the eastern end, where the lowest social station, doorkeepers, coarse entertainers, fools, smelly artisans, etc., had their places. Here the guest arrived, in a truly liminal situation, without identity or rightful place until questioned by the doorkeeper, and perhaps later verbally challenged by a designated interpellator (to loan a notion from the Unferþ episode in *Beowulf*) or by the king himself. Narrative detail of various kinds adds a dynamic to this picture: Cei telling Culhwch to return the next day and take his pick of seat high or low in the Welsh *Culhwch ac Olwen* (1988: 4), warriors performing feats of dexterity balanced on ropes strung across the lower open end of the hall (*Tochmarc Emire* 1933: par. 4). According to the legal tract *Críth Gablach*, this layout was replicated on a smaller scale in manors and farm houses to the extent that there were two rows of seats, with the most honoured guest occupying that opposite the host on the other side of the hearth or serving area.[21] So described, the royal banquet hall was a microcosm of ordered tribal society, with each member who had admittance to the hall occupying a predetermined seat and receiving the appropriate ration. This should not, however, lead to the assumption that the hall was a static environment; most of the narrative evidence (e.g., *Fled Bricrend*) and gnomological comment (*Tecosca Cormaic - The Instructions of Cormac, The Triads of Ireland*) suggests the contrary!

The hostel, on the other hand, may have had a different contingent of guests each evening, so that a more flexible ordering system and rather different dynamic must have been at work there. In order to appreciate in which other ways the hostel may have differed from the royal hall, the narrative thread of *Togail Bruidne Da Derga* may be picked up at the point when the king inquires where they may spend the night. He learns that they are proceeding south on the road of Cúalu toward Da Derga's hostel, near Tallaght and the border between present-day Co. Wicklow and Co. Dublin.[22] Conaire has favored Da Derga with generous gifts in the past and

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there is no reason to think the hosteller will begrudge him hospitality. In this and other tales Da Derga's hostel is called one of the five or six royal hostels in all of Ireland. Here it is described as located on four roads (perhaps a cross-roads, with fairly evident symbolism), meeting a more rigorous criterion than the hostel of the *briugu* in the law tracts. Later, it is stated that the river Dodder flowed through the hostel. It has seven doorways but only one door which is moved to face the wind, all other entrances left open as a sign of hospitality. From this one might conclude that the hall was not quadrangular; it may have been imagined as circular, or heptagonal with entrances on each side and aisles leading to a central, generally easterly open area. The hostel is described as having seven compartments between each two doors, thus forty-nine in all. One of the king's foremost warriors, Mac Cécht, offers to go on ahead and light a fire for the king's arrival, saying that since the hostel is on a road, he may proceed directly into it.

The further description of the hall comes in the course of a series of portraits recounted by a scout to his companions. The device has been called the 'watchman motif' and consists of a report by one person (here Ingcél) of visible phenomena which another, more knowledgable (Fer Rogain), can identify to those also present. This narrativization of information intended equally well for the tale's audience can be used for serious or comic purposes, can feature inversions, e.g., incorrect initial identification, here of the gigantic Mac Cécht, and has a considerable European distribution.[23] In this tale the device is realized through a group of raiders that includes Conaire's foster-brothers, sent in exile to Scotland, where they have joined Ingcél, a one-eyed killer of his king, parents and family who now demands a raid or 'destruction' in Ireland equivalent to that he had offered the Irish raiders in Scotland. The raiders have come inland from the seacoast and it may be assumed that Ingcél approached the hostel from the east. He recounts that his one baleful, three-pupilled eye made a circuit of the hall. A first reference point as to the placement of guests within the hostel is given when Ingcél is asked whom he saw in the champion's seat of the house in front of the king on the yonder side (*isin fochlu féindida in tigi fri enech ríg isind leith anall*, l. 669). The term 'champion's seat' (*fochla féindida*) is composed of the element *clé* which was the left or north side, also the location of the king in the royal hall. In the

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following there is no reference to *airide* or height differentials among the compartments, but neither is there reference to the champion's seat in a loge. He is perhaps best imagined as facing the king in the latter's compartment, unless the original wording of the description was not *fri enech ríg* 'in front of the king' (lit. 'before the face of the king') but *fri airenech ríg* 'before the king's honorific panel', in which case he would have been on the subjacent platform. Ingcél's response shows that, looking across the hall from his vantage point at the eastern entrance, he has immediately spotted the king's place and that of his champion (or the foremost warrior in the house that night), Cormac Cond Longas, son of Conchobar.

Ingcél will provide a series of twenty-seven similarly structured vignettes of guests and others in the hall (in another recension forty-one). In eighteen instances (twenty elsewhere) the individuals or groups are described as being inside *imdae*; in the others, they are in front of compartments (perhaps on *airide*), on the floor, near a hearth or external door. Thus, only a limited number of the supposed forty-nine compartments is described, and there is no reason to believe that the story in any more complete recension would have catalogued them all. After the champion's, a further eight compartments are described before Ingcél reaches Conaire's, and all contain members of Conaire's retinue: pipers, his steward, the giant Mac Cécht, the king's sons, monstrous Fomorian hostages, warriors, and the pre-eminent warrior Conall Cernach. Others in Conaire's party are then named, including the juggler, Taulchine, who like Conaire senses Ingcél's dire presence and whose ordered flight of swords, shields and spheres is disrupted, just as the dynamic and ordered flow of just rule has been arrested. At this point the sequence of figures both within the compartments and out on the floor shifts tone somewhat to include near-naked churls armed with flails (mortal harvest?), the three red riders from the *síd*, Fer Cailli with his pig and wife Cichuil, raiders, Conaire's fools and cupbearers, and doorkeepers. Significantly, the last named is a swineherd from the *síd*, Nár Thúathcháech ('blind in the left [north] eye'), a doublet of Fer Cailli, with a slightly different affiliation, but also carrying a squealing pig to the fire, just as Conaire goes to his fate. Dominating this zone is the hospitaller, Da Derga. But before turning to the host of the feast, the impressions of the hostel as portrayed by the author and through Ingcél's descriptions may be summarized.

While a speculative exercise, one could compare the hexagonal hostel to the burial tumuli erected by the Celts' predecessors in

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Ireland or to the later circular roofed wooden structures that seem to have been ceremonially fired and covered with earth. The convergent roads, Conaire's circuitous route (right around Tara, left around Breg, then south), and the seven entrances invite comparison with the similarly distinct but inevitably and jointly contravened *gessi*. After the defective judgment, all events, like all roads, lead to the hostel and to death. The reluctance of some of the raiders to undertake the raid, when they hear of the formidable host assembled in the hostel, only underlines its inevitable realization and outcome. Other aspects of fictional hostels strengthen this sense of fatality while not abandoning social order: cauldrons always contain just enough for the party of guests; either the fleshfork has supernatural properties so that each guest receives his proper portion on its first plunge into the cauldron (*Bruiden Da Choca*), or the guest must be content with what he transfixes on his first attempt (*Scéla Mucce Meic Dathó*).[24]

Although Ingcél says that his eye made a circuit, and his account does start with the champion's seat near the king and end with doorkeepers and other menials at the eastern entrance, whence the first response to the raiders will issue, the spatial panning of this cinematographical three-pupilled eye is not clear. In the longer sequence (Stokes' edition), Conaire is the tenth to be described; twenty-two descriptions later, among which five *imdae*, the compartment nearest Conaire's is named. Spatial and relational references are otherwise rare, although not entirely lacking.[25] The text provides no information on how the seven compartments between each pair of the seven entrances were thought to be organized; at a later point in the text (l. 1088), the number of entrances is increased to nine. Here the descriptive word takes precedence over any concern for spatial organization; the interior organization of the hostel has become a ground for the series of individualized figures. The same descriptive template in used on all occasions: hair colour, complexion, body build, weapons, characteristics that would create a specific emotional mood (awe, fear, pity), then some functional attribute (juggling with weapons, crying, sleeping), followed by another speaker's fuller identification and forecast of later deeds to be performed when the attack begins. The narrative/descriptive syntax could be called paratactic, as each item is relatively free-standing. The sense of rectilinearity and ranked sequence found in the royal hall are missing; the impression is rather

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more labyrinthine (cf. Doob 1990), a simile chosen for its pretended chthonic associations and not discredited by the flow of water through the house. One principal of spatial organization does, however, seem to stand out. If Conaire and his party occupied the north wall, Da Derga and his ominous companions seem to have been in the southern half of the hostel.[26] One of the early partitions of Ireland, in the time of the legendary invasions and before the organization as five provinces, was into northern and southern halves. The north was given to Conn, a name with martial and royal associations, the south to Mug, a term meaning 'servant' or 'slave'. Recalling some Dumézilian criteria, the north seems to have been associated with law, poetry, rulership, among other attributes, the south with fertility, music, service, the life of the body, and its death.[27]

To return to Da Derga, he is described as having blood-red hair, ruddy cheeks, and a blood-red mantle, and is adjacent to the red riders. "Since he took up husbandry, the entrances have never been closed since he built the hostel, but on the side from which the wind blows there is a door against it, ... his cauldron has never gone from the fire, but boils food for the men of Ireland" (ll. 1310-14). He is described as personally seeing to the needs of his various guests. Thomas O'Rahilly, in his ground-breaking but reductivist *Early Irish History and Mythology*, called the *bruiden* the site of the Otherworld feast (1946: 121). In this he equated it with the world of the *síd*. This association may be questioned. 'Otherworld' in the singular may well be a double misnomer as an English name for these worlds beyond the hillside or the shore, which might be without sin, age or ugliness but were not without contention.[28] This 'beyond' was variously the land of the immortals, the young, the subjugated but still powerful earlier races, but was not the Land of the Dead. In the Irish conception this was Tech Duinn, the House of Donn, located on Dursey Island off the south-west coast of Cork.[29] In an age without advanced cartographical aids, the island seems to have been thought Ireland's most westerly point as well as at the end of the longest diagonal axis, north-east to south-west, through the island. Donn, one of the primal ancestors of the Gaels, seems the best candidate for an Irish Lord of the Dead. In this regard, it is of interest to note how frequent are references to the *síd* in early Irish literature, while Donn and Tech Duinn are much rarer. It is as if the concept of the *síd* were more tolerable to Christian orthodoxy than one associated with pagan attitudes towards death and the afterlife of average mortals (about which we know nothing). It is then proposed that Da

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Derga's (or Ua Dergae's) hostel is not within the *síd*, although it may share some properties with it, e.g., sumptuousness, fatality, the site of adventure.[30] It is further proposed that the *bruiden* host is a hypostasis of the Lord of the Dead or, as his representative, a psychopomp, accompanied by two fosterlings, one white-haired, the other black, symbolic perhaps of life and death. The River Dodder, running through the hostel, is suggestive of the underground stream of other traditions, the *limes* either between the worlds of the living and the dead or, in medieval Christian vision literature, between the future abodes of the blessed and the damned. Da Derga is here marked with red chromatic coding since his feast will precede the death of a warrior king. The martial trappings of the guests are stressed in the accounts of Ingcél and his 'interpreter'.

Among the last hostel guests to be described by Ingcél and identified by Fer Rogain are Fer Cailli and Cichuil. In what might be called a programmatic statement they are called the "proper instruments" (*aidmi téchte*, l. 1355) by which the raiders may effect the death of Conaire, that is, their very presence necessitates and legitimates the action that will follow. The singed black pig that the swarthy Fer Cailli carries, his hideous consort, who thus explicitly allies the dark side of the goddess with natural forces, the Otherworld swineherd, the red riders--all are consonant with this interpretation of the host of the last feast, and further encourage a categorization of physical death in the early Irish world-view as third function-nature (3-N).

A brief word on 'hostel time' is perhaps appropriate. This is not the extra-temporal Otherworld, where a day counts as a year or a year as several lifetimes on the return to this world. Nor is it the advancing linear time of 'this side'. In the tale, Conaire spends an evening in the hostel as a guest, then three days fighting for his survival, events first predicted by the raiders and then judged by the narrator tedious to retell 'in real time' and passed over with a few general comments.[31] The evening in the hostel is one of suspended time, time arrested after the royal sin of injustice and resuming with the royal death and renewal of royal rule. As for Ingcél's circling eye, there is no exit, no possible undoing or restitution; the temporal dimension of the hostel conforms to its spatial organization.[32]

The effect of Ingcél's eye passing over the sleeping Conaire is to waken him, and prompt him to a vatic poem in the obscure *rosc* style.

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Much of the phrasing remains cryptic, but the general tone and content are foreboding and foreknowledge of the martial encounter ("a night for the destruction of a king this night", l. 1051). In the ensuing battle, the raiders suffer far greater losses than Conaire's retinue, but the hostel is fired three times, which exhausts its water supply and the river flowing through it. At the same time a magical thirst is put on Conaire; the giant Mac Cécht is sent with the king's cup (recalling the insignia of royal investiture and the ale of sovereignty) over all Ireland to find a stream that will furnish Conaire a drink.[33] When he finally returns, Conaire has been decapitated, but the last drink in Ireland is poured into his throat and he makes a reply praising Mac Cécht's loyalty. The magically imposed thirst is reminiscent of the sky-related portion of royal punishments which can take the form of storm, but also hot and arid weather forcing the king into a stream where he drowns, e.g., Lóegaire mac Néill. That this should affect the royal head, the loss of which will be the cause of death, is yet another first function feature of this closing scene.[34] The motif is recalled in the epilogue with Conall Cernach and his father Aimergin, when Conall says against his father's recrimination for having survived his king that his sword has given many "drinks of death" (l. 1538), the conscious pickup, in a typical Irish closure effect, of a tag first used by the raiders of Conall when described by Ingcél (l. 980).

Were a classification of the characters of *Togail Bruidne Da Derga* undertaken according to the above proposed expansion of the Dumézil/Miller paradigm, there would be few functional slots that were not adequately represented, as the following table illustrates.

Function	Nature	Mediated	Culture	Unmediated
1	Birdman	Conaire ----→	Eochaid	Eterscéle Conaire
2	Monstrous hostel guests	Human hostel guests	Cormac Cond Longas	Ingcél
3	Da Derga Fer Cailli	Royal functionaries	Artists	Cichuil

But this is an essentially indexical operation. The hostel in *Togail Bruidne Da Derga* superficially permits the application of Dumézil's tripartite model but, dominated by thematics, the tale is not thereby further illuminated. Such a procedure of identification

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does not adequately convey how all events after the king's partial judgment pull together in a coordinated natural process, whose workings are beyond man's control but not his understanding.

From the privileged vantage point of public we recognize the hostel's true nature. The hospitaller's functional obligation makes his hostel permeable, open to invasion by the forces of nature as it is to guests. The objective of his hosting and the king's willed/unwilled arrival there is not simple punishment of royal deficiency but a clearing of the functional slot of rulership to make way for a new candidate. There is a discourse of fatalism in the catalogue of names and enormous volume of description, where even the scullions and fools shown armed and capable of killing many times their own numbers of raiders. Created through direct discourse, the raiders' assessment of their prospects (foreshadowing in its darkest sense) is essentially ironic for, despite the eminence of the host they will face, it can provide no counterweight to the prophesied destiny of the king. The hyperbole of description is matched by functional hypertrophy, second function martial readiness multiplied by third function abundance but ultimately ineffectual.

In a rather different way from the hostel, the geometrized, normative concept of the exemplary king's hall, where good rule entails that all is in its rightful place, testifies to a social evolution that has moved past a tripartite organization of society. The factors at work would have been many: diversification as a consequence of a successful agrarian economy; the elaboration of legal codes that may have broken larger social structures into 'case units'; the legal importance of the extended family, similarly ramified; the particular dynamic attending the introduction of Christianity with its championing of the virtues of the third function over those of the second, accompanied by involvement in land-owning and dynastic politics, in which kings are now legitimized by a Christian cleric rather than by the sovereignty goddess.

Despite these reservations about the fidelity of early medieval Irish social organization to a putative Indo-European model, conceptions of the Irish king, in such detail as accession to, exercise of, and removal from rulership, do display tripartite polyfunctionality as Dumézil would define it, with rich evidence from the third function. Yet all over agrarian Europe medieval rulers were thought responsible for the quality of the weather, whatever additional

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intercession might be sought from Christian saints.

In medieval Irish texts hall and hostel are archetypical, symbolic structures, their size and opulence open to the inflation of story-telling. Did the true hostel have seven compartments between each pair of seven (or nine) doors, or fifty compartments, as in *Scéla Mucce Mac Dathó*?[35] Number symbolism, if ever operative in an intentional way, has broken down, although medieval antiquarians could still deploy quantitative concepts with other traditional matter. Among these, the triad continued in the European Middle Ages as a familiar organizing principal for much of the detail of human life. Equally vital seems the homological thought pattern, where sets of three were superposed (sky, earth, sea and underearth on the macrocosmic level; ruler, warrior, farmer on the mesocosmic level of society; head, torso, underbody on the microcosmic level of the individual) or lined up in parallel, even through new creations such as the three Christian martyrdoms. To take another example of the latter procedure from the material reviewed above, one might identify three complementary hall types: the royal banquet hall, where justice and hospitality were dispensed and social order and the arts promoted (1); the guesting warriors' banquet hall which might be the scene of internal contention, or be built of iron and fired to kill its occupants (2; *Mesca Ulad*); the hospitaller's plentiful hostel, open to all but no shield against fate (3). Hierarchy, too, was preserved in medieval Ireland, and may be inevitable in all but the most simple and subsistence-level social organizations. As a consequence of societal structure and heaven-resident divinities, the metaphors of height and verticality, and by extension rectilinearity, are everywhere still represented, as in the royal Irish hall, and will doubtless continue to influence our conceptual models in their spatial expression.

On balance, medieval evidence for a trifunctional conception of the cosmos and human society (with an original centre of gravity possibly in the former rather than the latter)[36] seems to stand in the same relation to putative Indo-European origins as does a subset within this same historical continuum, viz., magical practices that survived despite Christianization into medieval Europe and beyond in their relation to pre-Christian religions. The informing ideology has been supplanted but lives on in a shadowy Gestalt, a structure for categorizing traditional knowledge in the oral and slowly phased-in post-oral world. Dumézil's insights were profound and far-reaching. Even if we speak today with much less certainty about the thought-world of the Indo-Europeans (one society or several), his model will

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continue to serve among the effective heuristic tools employed to order and understand the rich medieval evidence and, in particular, the means – mental archive and traditional tale – by which it was preserved.

Appendix

Dark Pseudonyms of the Goddess in *Togail Bruidne Da Derga*

This listing is taken from the Knott edition and includes in parentheses variant readings and, when preceded by +, additional names found in other manuscripts than that at the base of the edition. Given the treatment of similar lists in other tales, and the putative origins of such lists, no definitive list nor sequence is, in my opinion, to be sought. Possible source words are selectively given, based on the overall impression of the list and others like it; the circular reasoning is acknowledged. This also masks the (intended?) ambiguity of many of the terms.[40]

Name as given by Fer Cailli:
Cichuil: *cích* 'pap, dug, teat'.

First name given by the goddess:
Cailb: medieval glossary entry: *calb* = *crúas* 'rigor, harshness'; *calb* 'head'.

The further sequence in response to Conaire:
Samain: Autumn eve of the Celtic half-year, a liminal time of interaction with the supernatural.
Sinand: *sín* 'storm' (cf. *Aided Muirchertaig Meic Erca*); *sined* possibly < *sine*, thus 'growing old'.
Seiscleand: *sesc* 'dry, barren' + *lann* 'ground'; *seisc* 'rushy place'.
Sodb: *sod, sad* 'bitch', *sodach* 'state of heat in dogs'.
Saiglend: (*Saigled*) *saig-* 'chastise'; *saich* 'bad, evil'.
Samlocht: *sam* 'joint, united' + *locht* 'blemish, fault'.
Caill: (*Coll*) *coll* 'destruction, injury'; *caille* 'forest', cf. *fo chaill* 'in outlawry, in hiding'.
Coll: see above.
Díchoem: 'unattractive, inferior', with negative prefix *dí-*; (*Dicheni*).
Díchuil: (*Dichiuil*) punning (?) on *Dícholl, Díchuíll*, attested proper names, = the negation of *coll*; *díchell* 'concealment, neglect; frenzied, effort, pains'.
Díchim: *díchin* 'dislike, want of love'; < *cim* 'yoke', thus 'unyoked'?; (*Dithim* 'forfeiture').
Díchuimne: 'forgetfulness'.
Díchuinne: *díchuind* 'senseless, foolish'; (+ *dichruidne* ?< *cruidid* 'milks, extracts'; *dicurumae*, cf. *dichuirid* 'banishes').

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Dairne: *dáire* 'oakwood' + dim. suffix *-ne*.
Dáirine: as above, + dim. suffix *-ine*.
Der úaine: *der* 'daughter, girl' + *úaine* 'green, verdant'.
Égem: *éicen* 'necessity'; *éc-* negative prefix or *éc* 'death' + *céim* 'pace, stride'; *éc* + *gem* 'winter'.
Agam: (*Ágam*) *ág* 'fight, battle, contest'; *ágamail* 'warlike'; *ag* 'bovine'.
Ethamne: *etham* 'arable land' + *-ne*.
Gním: 'deeds'.
Cluichi: *cluiche* 'game, sport'.
Cethardam: 'four' + *dam* 'ox, stag'; *dam* 'silent' (glossary entry); *dám* 'company'.
Nith: (*Nít*) 'fighting, conflict'; cf. *Néit*, husband of the following.
Nemain: war goddess; 'battle fury'.
Noenden: (*Noendhen*) *noínden* 'mêlée, fray'.
Badb: war goddess; 'scald crow'.
Blosc: 'noise, crash'; (+ *bolsc* ?).
Bloar: medieval glossary entry: *blór* = *glór*, 'noise'.
Huaet: (*hua mede*, see below) *úath* 'fear; clay'?; *úaite* 'oneness, fewness'; *úa* 'descendant'.
Mede: *méide* 'lower neck' > *méidech*, *méde* 'headless person'.
Mod: cf. *modarda* 'surly, moody; swarthy'.

This appendix appears here as published in Sayers, 1994b.

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NOTES

[1] Text in *Thesaurus Palaeohibernicus*, II: 244-47; textual amendment in Ní Chatháin 1990; discussion in Stancliffe 1982 and Sterckx 1981.

[2] References are to the Knott edition (1936) unless otherwise noted. An earlier edition and translation by Stokes (1901-02) contains a number of sections not represented in the recension edited by Knott, some of which will be called into the discussion. Miller's classification of other Irish kings will be reconsidered below; central texts are, for Bres, *Cath Maige Tuired*, and, for Cormac, *Cath Maige Mucrama*, and Stokes 1891.

[3] Fundamental explorations of the theme are Breatnach 1953, Mac Cana 1955-56, Le Roux and Guyonvarc'h 1983, Herbert 1992b. For the historical development, Herbert 1991; on the darker side of the goddess, see n. 8.

[4] Étaín's seduction of Eochaid can be viewed as an inversion of King Conchobar's unjust appropriation of the child Deirdre, and the forces and values she symbolically represents; see Herbert 1992a: 55ff.

[5] See Sharpe 1979 and McCone 1986. On the positively coloured, literary adaptation of the 'delinquent' theme in the Finn cycle, see Nagy 1985 and 1987.

[6] Some of Conaire's *gessi* seem to have legendary attachments to the Tara kingship beyond the confines of this tale. The text examined in Dillon 1951: 8f. opens as follows: *Seacht n-urgarta rígh Temruch innso, adhón; turccbháil gréine fair ina lighi i mMaigh Themruch, tairléim cétaine i mMaigh Bregh, immthecht Maighi Cuillinn iar fuiniuth ngréine, slaidhe a ech hi Fán Chummair, techt dia mairt for Tethuha thuaiscirt, bruinech for Bethra issin lúan iar mBealtaine, slicht slúaigh for Áth Maighne im mairt iar Samfuin* (These are the seven prohibitions of the king of Tara, that is to say: that the sun should rise while he is in bed in the plain of Tara, to break a journey on Wednesday in Mag Breg, to travel over Mag Cuillinn after sunset, to strike his horses in Fán Cummair, to enter north Tethba on Tuesday, a scout (?) at Bethra on the Monday after Beltaine, the track of an army (?) on Áth Maigne on the Tuesday after Samuin). For the tabus of the hero, see O'Leary 1988.

[7] While the prominent themes and motifs of early Irish literature may have deep native roots, one is well advised to note what could be called, for the Christian era, reinforcing biblical precedents (if not models); on the horsemen, cf. Revelation 6:4: *Et exivit alius equus rufus: et qui sedebat super illum, datum est ei ut sumeret pacem de terra, et ut invicem se interficiant: et datus est ei gladius magnus.*

[8] See Ramnoux 1954, Dalton 1970, Bhreatnach 1982, Le Roux and Guyonvarc'h 1983.

[9] Another Irish hypostasis is Comgán (or Mac Da Chérda); see the reference and discussion in *Aislinge Meic Con Glinne* 1990: par. 8 and related note, p. 47; cf. the Welsh equivalent, despite the French matter, in *Owein or Chwedyl Iarlles y Ffynnawn* 1975: ll. 117-64.

[10] See the discussion in Sayers 1992a, pursuing the motif as identified in Ó Buachalla 1989, also with attention to the Old Testament's use of the image of the plumb line in the context of divine justice.

[11] A comparable situation is found in one of the foretales to *Táin Bó Cúailnge* (*The Cattleraid of Cooley*), when the Morrigán, the war goddess, is apprehended by Cú Chulainn driving a cow from Ulster territory. She is accompanied by a man similar to Fer Caílli. When the hero addresses him, the woman disconcertingly replies, and vice versa. This clearly illustrates the disregard of social conventions that accompanies the goddess's intrusion into the human sphere to announce the imminent death of a king or hero (although Cú Chulainn survives their next meeting). See *Táin Bó Regamna* 1987: 52ff. On the relatively rare female:male flyting, see Parks 1990 and Swenson 1991.

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[12] *'Maith sin, a banscál, cid at-chi dúnd, inda fisid?' 'At-chíusa duidseo immurgu', ol sise, 'nocon érnába cerr na chárnai dít asin taig hi taudchud acht a mbértae eóin ina crobaib.' 'Ní bo dochél célsamar, a bean', ol seisem. 'Ní tú chélas dúind do grés. Cía do chomainmseo, a banscál?' ol Conaire. 'Cailb', ol sí. 'Ní forcrad n-anma són ém', ol Conaire, 'Ece it ile imda mo anmandsa cheana', ol sí. 'Citn-éisidi?' ol Conaire. 'Ní anse, ol sisi: Samain, Sinand, Seiscleand ...' 'Cid as áil dait?' ol Conaire. 'A n-as áil daitsiu', ol sisi. 'Is ges damsa', ol Conaire, 'dám oenmná da airitin íar fuin ngréne.' 'Cid geis', ol sisi, 'ni ragsa co ndecha m'aídidecht di ráith isind aidchise inocht.' 'Abraid fria', ol Conaire, 'bérthair dam 7 tindi dí ammach 7 mo fuidelsa, 7 anad i maigin aile inocht.' 'Má dod-ánic ém dond rig', oll sisi, 'co praind 7 lepaid n-oenmná ina thig, ad-étar na aill ó nach ailiu oca mbiad ainech, mad ro scáich coiblide na flatha fil isin Bruidin.' 'Is fechuir a frecra', ol Conaire. 'Dos-léic ind, cid geis damsa'* (ll. 545-77). In one recension cited by Stokes, Conaire says he will use none of these names, whether he is at the hostel a long time or short (1901-02: par. 62). Discussion of the names in Sayer's 1994b.

[13] To return to the classification of Bres and Cormac, the former starts his regal career with a degree of legitimacy in 3-N (part Fomorian heritage, personal beauty, etc.) but also sins through niggardliness on the same functional level (3-U). Cormac's boyhood correction of Lugaid's deficient judgment (1-C) is later complemented by Otherworld trials and further legitimation (1-N), so that his continuing rule lies in 1-M.

[14] No doubt as a consequence of royal death tales set in hostels that come under attack, the semantic range of *bruiden* was extended to mean 'contention, strife' (*Dictionary of the Irish Language, s.v.*); see Mac Cana 1980: 97n77. Perhaps because the king is represented as travelling, certain royal functionaries, more at home in his own hall, are unmentioned in *Togail Bruidne Da Derga*, e.g., poet, historian, judge. This may also be a consequence of the martial cast given the raiders' descriptions (see below).

[15] On inauguration, see Dubuisson 1978a, to be viewed in the larger context of Dubuisson 1978b; on Cormac in particular, Dubuisson 1973 and Ó Cathasaigh 1977. On sins, Jouet 1990, and those of a different King Cormac as described in the Irish-inspired Latin *Visio Tnugdali*, Gurevich 1988; on wounds, Sayers 1990b. The related triple death is re-examined in Sayers 1992b.

[16] *Compert Con Culaind* 1933: 8, recall in *Tochmarc Emire* 1933: par. 22.

[17] Cited from Kelly 1988: 36, who provides an overview of the *briugu* from the legal perspective. Other general comment on hospitallers and their relation to the king in Byrne 1973: 36f., 56, 62, and McCone 1984.

[18] The similarity of hostellers' names deserves brief comment. Despite the impression that a single fundamental concept may lie behind them all (two like parents), closer scrutiny suggests a relatively late move toward standardization as death-tales of this kind were gathered into a canon (i.e., listed by title among the tales poets at various levels of qualification were expected to know) and committed to writing. The forms *Da Derga* and *Ua Dergae* have been commented on above; only the 'red' element is assured. In the parallel tale, Da Choca is a smith, but the second element of the name has no plausible etymology suggestive of human qualities. Thurneysen notes that a later text explains *Mac Dathó* as 'the son of two mutes (*tó* = *túa*), but considers this explanation doubtful (*Scéla Mucce Meic Dathó* 1935: i). This same tale lists among the five hostels of Ireland *bruden Meic Da-Réo* (1935: 1; elsewhere *bruden meic Cecht-dá-reu, b. da Ger* 'sharp'). Possible derivations are from *reo* 'stripe, streak' and homonyms meaning 'dense darkness' (not assured) and 'cast, throw'. The names of other hostellers, Forgal Manach and Blaí, do not conform to the pattern of supposed duality. Note, too, the tale title *Togail Bruidne Dáthi* (Thurneysen 1921: 31).

[19] Note the persistence of the motif in later Scottish tradition; Jackson 1962.

[20] Base texts are found in Petrie 1837, and naturally merit a modern re-edition. Related

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texts, so treated, are found in Best 1910, O Daly 1962. The following discussion draws on Sayers 1990a.

[21] Cutting epic exaggeration down to size is the information that the house of a tribal king should properly be twelve metres across and have space for a retinue of twelve (l. 569).

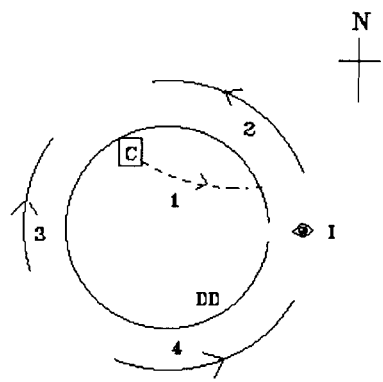
[22] See the discussion in O'Rahilly 1946: 117-30, who, despite his view of the historicity of these events ('the Laigin invasion'), wisely discourages efforts at a more precise location.

[23] Carney 1955: 305-21, Sims-Williams 1976-78 and 1977-78, Sayers 1986.

[24] Some additional or divergent features of other hostels in the Ulster cycle tradition can be summarized: seven doors but also seven roads (*sligeda*) through Mac Dathó's hostel (unless the latter is read as 'aisles'); the hospitaller Blaí tabu-bound to sleep with any woman who reached his hostel without her husband (*Aided Cheltchair meic Uthechair,* summarized in Thurneysen 1921: 572, see too McCone 1984); the hostel as asylum for killers (*laime derce*, lit. 'red hands') according to *Bruiden Da Choca* (par. 30); 'champion's seats' on either side of the king and 'hero doors' *laochdoirsi* for entry (*ib.*, pars. 30 and 57).

[25] Typical locations, which tend to be relatively more frequent in the additional descriptive units edited by Stokes, are *i n-airthiur in tige* ("in the eastern/front part of the house"), *friu anair* ("to the east of ..."), *isind leith atúaid* ("on the north side"), *for craund siuil* ("below a [distinctive?] pillar or house-post", less likely a wooden rail or partition as Knott would have it, 1936: 110, *s.v. crand*), *hi comfocráib imdai ind rig fressin* ("close to the compartment of the king himself"), *i cend in tened* ("at the head/end of the fire").

[26] One way of reconciling the information in the text would be to imagine the king on the north side and Ingcél spying from the eastern entrance. After the mention of the champion before the king, Ingcel's eye moves to the east and works its way back toward the king; then it moves to the western extremity and returns eastwards to the king. In the southern half with Da Derga, there is a generally eastwards movement back toward the door, where the attack will come. Other instances of two separate parties each occupying half of the hall are found in *Scéla Mucce Meic Dathó* 1935: par. 5, and in the tale about the birth of Aí son of Ollam, quoted in Radner 1990: 172f.



[27] Sproule 1984, Rees and Rees 1961: 102ff.; see, too, their discussion of concepts of space in 'The Centre', pp. 146-72.

[28] See, most recently, Carey 1991 and Sims-Williams 1990. Byrne 1973: 62 follows O'Rahilly in equating *bruiden* and *síd*, and in speaking of the Otherworld god who presides over the Eternal Feast, but recognizes that in *Togail Bruidne Da Derga* he appears in more malevolent form, and that there occurs an ominous change in the feast 'as it is realized to be that of the dead in the Otherworld'. Lehmann and Lehmann 1975 also support the equation 'otherworld: land of the dead'.

[29] Meyer 1919, Lincoln 1981, briefer treatment in Rees and Rees, 1961: 97f.

[30] A rather different conception of what is properly termed 'the Otherworld hostel' is found in the Finn cycle; see Nagy 1981, Ó hÓgáin 1987. Distinguishing features are the generally malevolent attitude of the hostellers, and the acquisition/accrual of supernatural powers by human (non-kingly) intruders, who generally survive their entry into the hostel,

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although not always unscathed.

[31] See Stokes' ed., par. 152: "Howbeit then, but it is long to relate, 'tis weariness of mind, 'tis confusion of the senses, 'tis tediousness to hearers, 'tis superfluity of narration to go over the same things twice"; cf. Knott ed. pars. 149-53.

[32] According to Caesar (*de bello Gallico*) the time unit of the continental Gauls began with night, followed by day, and they considered themselves the sons of the god of the night (cf. *Donn* 'dusky'). Perhaps implausibly, the attack on the hostel comes at night. The temporal and spatial coordinates of other imaginary worlds, e.g. heaven and hell in pre-Dantean medieval Latin vision literature, to which there was an important Irish contribution, are examined in Gurevich 1988; the same scholar has also explored the mythological time and space of the pagan Scandinavian worldview.

[33] In a search for triadic organization, one might see Conaire first asking a drink of his cupbearers, and this would be the ale that features in some accounts of the sovereignty goddess's recognition of a future king. But the ale, like the king's rightful rule, has been expended, here in putting out the fires. Conaire asks a drink of his warriors, but they prefer to guard him in and before the hostel. It is then left to the giant Mac Cécht to seek water from all the rivers and lakes of Ireland, a double magnification or move to the macro level of the fatal thirst. This summary streamlines the narrative somewhat, since Mac Cécht is asked both before and after the warriors, but does yield a progression through functions one to three. The categories display the frequent 'lateral' homological shift: 1) royal insignia, 2) martial ethos and activity, 3) rivers and lakes. A tighter association of motifs is found in *Cath Maige Tuired*, where it is the cupbearers of the Túatha dé Danann who pledge to cause the water courses of Ireland to dry up before their enemies, the Fómoiri (1983: par. 79).

[34] See Sayers 1992b. Even a king as perfect as Cormac mac Airt could on occasion be accused of *anfhír* 'untruth', i.e., injustice. In typologically similar fashion to Conaire he is said to have died in the hall of a hospitaller by choking on a fish-bone, here lack of air, not water, affecting the royal head, albeit through a third function agent. A Christianized version of the death attributed it to the curse of druids after Cormac had professed belief in Christ (Byrne 1973: 56).

[35] The problem of reconciling epic texts to archaeological evidence (or to legal texts, see *supra*) cannot be undertaken here; see Shaw 1952: 73, Le Roux 1966, Hamilton 1968, Wagner 1974, Murray 1979 and 1983: 19-27, and 58; cf. Hume 1974. Information on additional studies, with attention to the clay and wattle structure and possible temporary nature of some historical halls, is found in Ó Corráin 1982: 218n18 and Sims-Williams 1991: 59. Appearing since the drafting of this article are stimulating discussions of early Irish buildings in *Emania* 12 and 13. As for biblical precedents, consider Solomon's palace, 1 Kings 7, or the new Jerusalem, Revelation 21: 9-21. On the possible assumption of the *bruiden* motif into Christian poetry, note that Hell is likened to a cold hostel filled with red sparks (*bruidhean fuar na ndrithleann ndearg*; *Dioghluim dána*, 1938: 31, l. 3). In comparable fashion, Hell is called a huge, dark hall, the measure of which Satan is obliged to take, in the Old English poem *Christ and Satan*, ll. 690-709, *The Junius Manuscript* 1931 (cf. other frequent references in Old English to God as *Meotod* 'Measurer').

[36] See the decisively reorienting article Lyle 1982 and a collection and synthesis of much of her work of ideological modelling in Lyle 1990.

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America's Educational Decline: The Deeper Realities

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Rapid Descent

The evidence for a fundamental shift in the U.S. educational profile was already clear by 1980. *A Nation at Risk*, published in 1983, was a product of both federal and state concerns about this decade-long plunge in achievement levels at the SAT as well as the general secondary school base.

> Each generation of Americans has outstripped its parents in education, in literacy, and in economic attainment. For the first time in the history of our country, the educational skills of one generation will not surpass, will not equal, will not even approach, those of their parents." (National Commission on Excellence in Education)

It must be recalled that by the late 1970s the average American had been informed, by Jimmy Carter and others, that our expectations for unlimited prosperity and indefinite increases in our national standard of living were unrealistic. We as a nation and a people had better rein in our expectations for ourselves, our children and grandchildren.

We had by then been subjected to several oil crises, a growing awareness of the extent of our deindustrialization, at the same time observing the seemingly inextinguishable successes of the Japanese and the West Germans in economic and social life. These nations, of course, we had relatively recently destroyed technologically and militarily.

Our cultural ambience, on a slide downward ever since the turmoil of the '60s, seemed fixed in descent, what with crime, drugs, family disorganization, an ongoing urban debacle. AIDS was barely on the horizon then.[1]

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Educational achievement has always loomed large as a national barometer, for two reasons. One is the American love affair with public and universal schooling as the great social highway of ascent into the middle classes, as well as the institutional magnet of national assimilation and unification.

Second, schooling and educational achievement are anticipatory in the chronological sense. What happens to our society in terms of economic prosperity and cultural florescence is created decades earlier in the school, a seedbed and nursery for national greatness or weakness.

And it was weakness that we were observing by the early 1980s, weakness that was not merely symptomatic of passing frailties – as in the youth counterculture of the 1960s – or the "southern resistance" to desegregation and educational equity.

This was the "real stuff," and it was resonating in impact from the economic to the basic social institutions of our society. The resolve, at all governmental levels, was to fix the sickness, reinvent public schooling, as our officialdom phrased it. George Bush was audacious enough to call himself and his administration, the "educational" Presidency.

The Poverty of Money

By 1994, it must be clear that our educational illness, even the larger profile of national decline that we observe in every dimension of our public and private lives, is systemic, perhaps even permanent. Monies have poured in. In per capita expenditures we are second only to Israel in the world.[2] It is simply not true that the urban poor are being denied their share of the national till.

New York City spends over $7500 per child, per year, in its public schools, over $8,000 in New York State as a whole. Newark, New Jersey, with one of the poorest demographies in the nation, spends almost $10,000 per child, per year. Unfortunately it is also true that the now-infamous bureaucratic corruption in these public systems parcels out less than half of these sums for the classroom.[3]

President Clinton's daughter attends a plush private day school that charges $10,500 per-year tuition. Other successful alternate schools, including Catholic parochial schools, charge a fraction of these sums for tuition. Few can cogently argue today that any such high public expenditures of money have a realistic impact on the

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quality of educational achievement attained by school students.

California, in November of 1993, voted against a "voucher" referendum that would have provided all children in that state, rich or poor, with a sum of $2600 for use in a school of their choice. In theory this would have provided every classroom of 25 students with $65,000. It is difficult to argue against the sufficiency of such a sum to provide for salaries, rental of facilities, and supplies for such a classroom, and at a fraction of the current cost.

It would have been interesting to observe the kind of education that might have taken place, if every family would be given choice of classrooms, and every school choice of the students that they could successfully educate. The irony is that the $2600 per-pupil/per-year figure is the approximate cost of such an education in the Catholic parochial schools. Impartial analyses of comparative achievement levels between these schools and the public schools give a distinct advantage to the parochial, and at less than 50 percent of the average $6000 per pupil in the public schools across the nation.

Facts, History, and Context

Our awareness of the American educational failure derives from two external yardsticks. One is the comparison with ourselves over time. Some of it will of necessity be historical and anecdotal, what the memories reveal in the writings and images of American history, and what individuals of experience recall of these changes over time.

But, there are also statistics, and the fact that our national decline, unlike Rome's, seems extremely precipitous. We have the evidence in our SAT scores over the past quarter century. Our illegitimacy rates are evidence, as well as crime, divorce, poverty, and, of course, the economic data, which sharply outline the great changes in personal as well as corporate wealth in the U.S., all things such as inflation and demography, placed in perspective.

The second compares us with the rest of the world, also in a dynamic of change over the past generation or so, 25-40 years. The longer time line reveals the larger international economic and political shift in balances of power and wealth. Over the shorter run, perhaps ten or fifteen years, we have an increasing array of statistical comparisons of educational achievement with much of the rest of the world.

Interestingly, the Educational Testing Service, of Princeton, New

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Jersey, the developers of the SAT, under contract to the International Assessment of Educational Progress (IAEP) in Washington, D.C., has been in the lead in presenting this evidence to the American public. That they are not happy comparisons should offer more weight to its message, since it sullies the every day complacency of so much orthodox ideological political rhetoric that emanates from the institutional power centers.

The SAT Verbal decline of about 60 points, or 12%, over the past 20-plus years is by now axiomatic. All but the top two or three colleges and universities have been effected. Professorial anecdotal evidence, witnessed in remedial courses in writing and reading skills confirm what Charles Murray and Richard Herrnstein and others have reported, that the decline at the top of our achievement levels, as compared with the headier days of American world dominance in education, is a reality.[4]

Lower down on the educational scale, at the levels preparatory for creating a competitive work force, the declines are just as serious. A recent IAEP report stated that about 2% of the juniors and seniors still in high school could write a simple declarative or descriptive paragraph acceptable to a college admissions officer. At the same time, French and German students of similar age levels are required to write complex essays, often on esoteric topics, "The American Presidency and the Cold War." The passing rate of the German and French students is in the 30%-50% range.[5]

For a number of years the statistics in U.S. math achievement have held level. Less than 50% of our 17-year-olds can do Junior High School (for 13-year-old students) math problems. Reading and being able to use a train time table also presents to our high schoolers, and young adults, formidable difficulties:

"Fewer than half the high school seniors (46%) demonstrated a consistent grasp of decimals, percents, fractions, and simple algebra [7th grade] and only 5% showed an understanding of geometry and algebra [11th and 12th grade] that suggested preparedness for the study of relatively advanced mathematics."[6]

If it were a matter of internal disintegration, we could play "let's pretend." After all, what did the Roman world have to compare itself with? It could accept the ruling ideological and institutional structure, that is, until Christianity quietly usurped reality for the masses, and announced to them, a truer descriptive meaning for this

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unraveling world civilization.

Today, as never before the world sits in our lap, indeed in everyone's lap. The massive migrations, plagues, economic slowdowns, slip across continents, befuddling the impotent political leadership. We have been fully apprised of our internal and international decline in educational and social position for at least these ten years. Nothing has occurred internally to stem the weakening.

It is not merely government or the education bureaucracies that dig in their heels today. The communications media have refused to open a dialogue on the underlying causes of this ongoing collapse. The evidence is there, but it has not been allowed to be presented in any coherent manner so that public opinion might be alerted.

Hans Eysenck has referred to this conspiracy of silence by the review and communications media against any discussions of the reality and the significance of intelligence variability, as *Todgeschwiegen*, death by silence.[7]

For an important, if frightening example of our educational collapse, together with a portent of things to come, take the recent 1992 ETS report on the math achievement of 13-year-olds around the world. It placed Mainland Chinese students highest of all, at 80. The Koreans and Taiwanese scored at 73, Germans and Japanese were not included. Other European nations, including some in Eastern Europe, Russia plus others, then, in 1989, in social chaos, scored in the 67-72 range. The U.S. score of 55 was just above several Third World nations.[8] Starting at age 13, students begin to show strongly predictive indications of their future educational and vocational achievements.[9]

Indeed, the Chinese economic and technological advances, now that the Chinese have shed the incubus of Maoist fascism, are placing before the world some of the highest economic growth rates ever observed. They are even beginning to rein in their birth rate so that it now approaches European levels. Some may describe the policies that have helped to reduce the population growth as Draconian. Yet the Chinese argue that they have responded to rational necessity.[10]

With some Singapore and Hong Kong I.Q. scores in the 110 range, along with other worldwide indicators of high Chinese intelligence, educational, and economic achievement, is it any wonder that this phenomenon that has captured the world's attention?[11] The transformation of resource-barren Taiwan into a great technological

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center, along with enormous surplus wealth, now being invested through Hong Kong into Mainland China and the rest of southeast Asia (to the tune of $25-50 billion) should be a lesson broadcast to the American people over T.V. and the print media, with loudspeakers, not the passing references that barely flag our awareness. [12]

It would be idyllic not to have to concern ourselves educationally with the dross concerns of economic viability or jobs. The cultural creativity of the society would be a far more elevating issue of educational concern. But note our contemporary moral and cultural controversies: how to restrict guns and violence in the schools, to distribute or not to distribute condoms to our children, to play "rap" or Rachmaninoff in our few remaining music classrooms. These value and programmatic controversies also reflect something of the changing character of education in the American public school.

The economic issues, essentially international as cause, are burning home the question as to the "why" of our educational failure, and all else as consequence. An example can be seen in the ongoing collapse of the California educational system. The Los Angeles level of yearly support has fallen to $4,187 per pupil, one of the lowest expenditures for a major city in the nation. These schools were once a jewel in our national treasury of resources. And there is still a $400-million deficit in the Los Angeles Education Department budget.[13]

So, too, the vaunted California higher educational system, created by Clark Kerr in the 1960s shows signs of unraveling. The State University system is abandoning programs helter skelter, thus legally eliminating tenured faculty, to maintain itself amidst a 1993 statewide budget deficit of $11 billion. The distinguished University of California faculty has progressed from having their salaries frozen, now submitting to actual reductions.

The Literacy Decline and Its Causes

In September 1993, an ongoing U.S. Department of Education study of literacy levels in relation to the developing techno-educational requirements of a modern society estimated that about 50 percent of our population was incapable of meeting the educational and skill requirements of employment in our modern economy.(14)

Although the study explicitly avoids the use of the term "illiteracy," this word must be invoked. For example, the years since

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the last DOE study of adult literacy in 1985 showed an overall decline of about 4 percent in the skills of the 21- to 25-year-old adults.[15] In 1985 they were in American secondary schools.

Beyond that, 48 percent of the 26,000 adults sampled, who scored in the bottom two of the five categories, are deemed not able to function at anything more than the most unskilled jobs in our society, which jobs are disappearing at a rapid rate. If this 48 percent of our population, in terms of the modern international economic standard is not *illiterate*, then the word has no meaning.[16]

For example, this most recent literacy test presented, as did the earlier 1985 study, a bus time table analysis as a criteria of level 3 achievement. It required the reader to calculate the number of minutes it would take to go from one stop to another. The question was presented in a very simply printed format, and presumably was within the range of a fifth grade child in any First World nation. Yet these 48 percent were not able to do this simple analysis along with a small number of individuals whose overall scores put them in the higher level 3 category.[17]

In a September 9, 1993, interview on PBS with Robert MacNeil, Madeleine Kunin, Under-Secretary of Education threw up her hands when asked about the causes for this social disaster. She did the same when asked about remedies. In fact, she avoided the uncomfortable truths that the increasing demands of this new economy for highly educated individuals had impacted on the U.S. much more than its once defeated rivals, both of World War II and the Cold War, and indeed, most of its allies. [18]

In other words, the demands for improvement in educational levels has been met by nations whose educational systems were not nearly as developed or universal during the time that the U. S. led the world economically, educationally, and technologically, the period between 1940 and 1965.

Fairly standard explanations of a traditional sort are put forth by various interest groups to rationalize this debacle. They range from a view that the U.S. has suffered a national seizure induced by extraordinary affluence, indolence, and cultural fatigue, to an attack on the public schools as exemplars of statist bureaucratic institutions that need to be subject to market competition.[19]

Our educational decline can be traced from the mid-1960s and the conflicts and confusions induced by the youth counter culture, the

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last gasp anti-desegregation struggles, the assassination of a President and an extraordinary civil rights leader, the tumult of wealth, inequality, privilege, the vision of the U.S. as dominating the American Century. But more was happening, largely below the surface of our perceptions and willingness to acknowledge.

First, it should be noted that the great affluence that characterizes Japan and West Germany today began to impact on the world scene during the early 1960s. This wealth still accumulates, and into our own day, without any significant decline in their social or technological competitiveness. This period of thirty years is equivalent or greater in time to our own surge into wealth and power. In fact, the Germans, early on had to struggle against their own youth malaise, one laced with revolutionary Maoist and Stalinist violence.

Further, both educational systems, especially the German, are state controlled and thus subject to the same bureaucratic arteriosclerosis as ours. Ours is more highly decentralized, 50 states, and, still more, shaped by the competitive reality testing of the parochial and independent schools, and an especially strong and diversified private higher education establishment.

The rarely discussed event which has had an enormous if unrecognized impact on the American social system today, especially impacting on education, was the introduction of the birth control pill in 1960 at a time of a surge in the size of our youth cohort, as well as the florescence of the American life style of material self indulgence.[20]

What the "pill" accomplished was to free the well-educated and the affluent female from the inevitable consequences of an independent sex life. Today, we see the likewise predictable results from what may be another sea change in the culture of the affluent, as the fear of AIDS puts a damper on casual sex. AIDS may do for our culture, inevitably for educational achievement levels, what few moralistic remonstrances could accomplish.

In the end, these technological innovations, in their impact on cultural style and individual human behavior, altered, perhaps permanently, the demography of our nation. What may have started as an acceptance of more liberal behavior styles for affluent "hippies," led to an acceptance of such behavior by officialdom in terms of welfare and *family* support programs. This change in what is deemed officially sanctioned behavior has reshaped the intellectual capacities

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of the United States in every social domain that is available for rational scrutiny, from education, economics, employment, family life, to the incubus of social degradation in our communities.

In the 1950s the illegitimacy rate stood at approximately 1.7 percent for whites and 16.8 percent for blacks. By 1992 the rate had increased to about 20 percent for whites, approximately 68 percent for blacks, with an overall U.S. rate of 31 percent, some say on the way up to 1/3 by the mid-nineties.[21] For the African-American community, this destruction of the family structure has been catastrophic, as evidenced in every available social pathology statistic.

Jessie Jackson, in early 1994, has been quoted as commenting that in any one recent year, more blacks have been killed by blacks than the total ever lynched by white mobs!

Yet there are still "liberals" who glory in this cultural sea change. "In 1950, only 1.7 percent of white babies were born to unmarried women compared with 16.8 percent of black babies, or ten times that figure. But by 1989 the most recent reporting year, the respective rates for the races had risen to 16.1 percent and 66 percent. While two thirds of black births now occur our of wedlock the accompanying fact is that the proportion of black births has declined from ten to four times that for whites. Indeed, the white rate is where the black figure was 40 years ago. *So even in an age of racial division, we may be coming close to a consensus where sexual behavior is concerned.*" (emphasis added)[22]

Educationally, the results of this enormous shift in the demography of social class in our society has had its historically predictable catastrophic results. Achievement testing of those high school students who remain in school to graduate with their age cohorts, about 75 percent, reflect this profile change in our overall population. From reading skills to mathematics and science achievement scores, the criteria being what an average college first-year student should be equipped with on arrival, only six percent rise to this level. Whites average about 9 percent on such criteria, with blacks consistently under 1 percent, Latinos below 2 percent of the cohort tested.[23]

It should be noted that the study of literacy discussed above found that only 4 percent of the adults tested scored at the highest level, #5. Presumably this level sought to encompass the literacy abilities of young adults with college preparatory skills at the best high school level, equivalent to the usual format prepared by the ETS

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of Princeton, the contractor for the Department of Education in the Literacy study as well as many other national and international comparisons.[24]

In the breakdown of these scores by ethnicity, the scores were as follows: For the lowest two categories, the illiterate ones, whites averaged at 43.33 percent of the test takers, blacks, 78 percent, Hispanics, 79 percent. At the two highest levels whites, 24.33 percent, blacks, 3.33 percent, Hispanics, 4.33 percent. At level 5, the highest, fewer than .05 percent of both blacks and Hispanics accomplished the requisite tasks. These scores are consistent with all other U.S. ethnic scores, both in national as well as international studies.[25]

The African-American community comprises about 12 percent of the U.S. population. It therefore should be no surprise that a variety of affirmative action and quota arrangements must be placed into law in order to effect some multiracial representation in all but the most unskilled jobs. And with both the African-American and Latino communities expanding from the lower half of their social class structure, as evidenced by their illegitimacy and welfare rates, as well as a new white underclass seemingly in the making, the estimate that one third of the population may be classified as impoverished by the beginning of the new century does not appear to be an overly hysterical prediction.[26]

Into this demographic stew of educational descent one must at least mention the dimension of immigration, legal and illegal. The woes of the Los Angeles Public Schools noted above are to a large part attributable to the influx of non-English-speaking students, students with minimal educational and social preparedness, to a great extent now dependent upon the American welfare system for sustenance.[27]

The situation in cities such as Miami, New York, and Chicago is similar. The proportion of non-English-speaking children, who are terribly poor, and often alienated and disruptive, has collapsed educational order and standards. The transition of these cities into vast underclass homelands, covered by a barely functioning veneer of corporate and institutional affluence, has already undermined the long-term economic viability of these once great metropolises. The 1993 $300-million deficit in the Chicago Public Schools budget, which required emergency state intervention for the schools to open, may

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symbolize the future of public education in urban America.

New York City in 1992-93 was expending over $8000 per-year, per-child. Only a third of this amount ever got into the classroom. Poor urban communities such as Newark and Jersey City, New Jersey, were expending almost $10,000 per-year, per-pupil, equivalent amounts expended in a fine private school. Yet the results, both drop-out rates and achievement scores, were horrendous.[28]

Disappearance of the Elite

The view from above is even more disheartening to the future educational prognosis for our nation. In 1986, Heidrick and Struggles, the Boston-based executive personnel firm, did a survey of female executives of corporations then earning $117,000 per year including benefits but not bonuses. These women, obviously at the end of their child-bearing years, had few children, 54% having none.[29]

Governmental statistics, of which there are notably few, show similar patterns. A study was published in 1979 entitled "National Longitudinal Study." It reported on the high school class of 1972, four and one half years subsequent to its graduation. Clearly this was already a select group from that age cohort. All graduated from four-year high schools: "As of October 1976, 36% of the men and 53% of the women were or had been married, about 10% of those ever married were divorced or separated, and 23% of all persons had at least one child. *Thirty percent of low ability whites and 49% of low ability blacks reported having children.*"[30]

Even more interesting and important was the culminating statistic: *Only 6 percent of the blacks and 10 percent of the whites in the highest quartile reported having children.*"[31]

Other natality data revealing the educational levels of white and black mothers and fathers support the evidence for this pattern of preponderant reproduction from the less educated and thus more vulnerable segments of our society. In 1988 41 percent of new white mothers and 40 percent of white fathers reported that they had more than twelve years of education. For African-Americans who had a birth in 1988, the figures were: mothers 25 percent, and fathers, 16 percent.[32]

Without large-scale surveys from, for example, the more selective colleges and universities, in terms of the natality patterns of their graduates, we are unfortunately forced to rely to a large extent

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tion that a large proportion of our most educated and able young women, since the 1960s beginnings of the use of the birth control pill and the growth of the feminist movement, has chosen to renounce family life for careers.

The growth of lesbianism as an acceptable life style for many highly educated and able women is another factor, especially when we consider that *gay* men and lesbian women have extremely high incomes relative to the national average; some estimates are that it is twice the national average. The powerful financial support by the homosexual community for the Clinton candidacy is added evidence for this argument.

Perhaps the most critical educational consequence of the removal of large segments of our most educated, professionally and economically successful segments of the current young adult generation is the drying up of talent at the top. It is here where recent SAT data are most impactful. *The Chronicle of Higher Education* reported in 1993 that even though more students took the SAT exams in 1992 compared to 1972, 116,630 scored over 600 on the Verbal SAT in 1972, as against 75,243 in 1992.[33]

For various reasons, especially the broad-based sampling of an individual's knowledge and general thinking skills, most testing authorities view the Verbal side of I.Q. and aptitude tests as the most predictive of the educational and vocational future of an individual.[34]

Indeed, this was the Space Agency's conclusion in selecting the candidate astronauts in the earliest and most unpredictable stages of the Mercury, Gemini, Apollo space exploration program. I.Q. scores were as follows: average test pilot, 118.9 Verbal, 115.8 Performance; Mercury and Apollo astronaut candidates, 131-132 I.Q. full score. The chosen astronauts for Mercury and Apollo had I.Q.s averaging 135. In relation to the general population, these scores are equivalent to those traditionally classified as gifted humans, over two standard deviations above the norm. These astronauts had also to succeed competitively at many strenuous physical, sensory, and psychological stress tests in addition to their proven successful histories as test pilots.[35]

What Our Economy is Telling Us

The American educational decline is paralleled by a concomitant social and economic crisis. This does not mean that one cannot

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social and economic crisis. This does not mean that one cannot squeeze greater achievement levels out of the shrinking intellectual/educational potential of our population. The larger issue of dynamic demographic changes has to be met on the political policy-making level. However, in order to address the critical touchstone of educational revitalization, if, indeed, that is still possible, we must understand the larger problem.

Ultimately, any hope to bring our nation back to its international position of wealth and leadership will depend on our economic resources both for the middle classification of our citizenry as well as the funding of our infrastructure and institutions – the hospitals, libraries, universities, parks, symphony orchestras.

As noted above, an ever greater proportion of our people is slipping into educational and thus vocational incompetence, *vis à vis* the rest of the developed and the developing world, literally decade by decade. With approximately 50 percent of the adult population incapable of handling basic reading, writing, and numerical problems, and the school-age population spiraling down toward Third-World levels of achievement, it is no wonder the fear that with our manufacturing and mercantile job base disappearing (as the once great corporate employers shrink and move overseas to new markets), thriving service sector employment, as in the financial markets, will be undermined and lost for our domestic work force.[35]

The question of educational strategy now is influenced by our larger economic needs. What is possible in terms of both these institutional variables can only be constructed out of the available repository of human possibilities. Our dismaying limitations in choice arise because the subjects of these calamitous educational facts are our existing and potential citizenry. What can be done to shape their skills into an economy, if not First World, then at the least employable and productive on some international level of parity?

One way to analyze the situation is to note what is happening in the developing world, where the great international corporations of all the nations are rushing to build and operate new productive facilities, both from the domestic and the export markets. The top executives, engineers, and production managers from Japan, the U.S., Korea, and Germany can train modestly educated Mexican, Malaysian, Indonesian, workers to achieve excellent levels of quality control.

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manufacturer in the world. A recent $12 billion modernization by its largest auto producers, Fiat (Italy), General Motors (U.S.), "Auto-latina"- Ford/Volkswagen (U.S./Germany), exemplifies the international search for low-cost nations and their increasingly skilled but still low-wage workers.[36]

These workers, of course, are chosen from the best available in the developing nation. This is done without recourse to quotas, debilitating litigation, high taxes, and other costs with which American domestic producers are burdened, which inflate the wage and benefits package of an already overpaid work force given the international competition, educationally and productively. The Japanese and German auto producers in the U.S. have attempted to avoid the existing structure of market disincentives under which existing employers must operate, by locating their plants in rural areas. Mercedes-Benz is an example. It plans to build a plant in Tuscaloosa, Alabama, where it may access presently under-educated and thus under-achieving small town and farm people who can be trained to world-class assembly operations.

The Carnegie Corporation has recently reported that 60 percent of married women with children under 6 years of age are now in the work force as compared with 18.6 percent thirty years ago.[37] This reflects the paucity of good jobs for their husbands and the economic pressures that have fallen heaviest on the working blue-collar, and now the white-collar middle class.

Unfortunately this trend has fallen even harder on the urban minorities who are structurally trapped by a dying economy at the low skill bottoms, and the increasingly labor-efficient techno-structure at the top. But also, and tragically, these are just those minorities whose aptitude and educational achievement profiles are rock bottom, using as criteria any international standard of comparison.

The larger U.S. educational picture reveals the pervasiveness of our educational decline. Since 1986, the number of our engineering graduates has declined by 19 percent, 15,000 per year. This adds up to 25 percent fewer graduates every year than Japan. Our population is twice that of Japan.[38]

The desperate need heard throughout our land is for *jobs*. Thus we have heard loud and clear the outcry against NAFTA, even while it is supported by one of the most powerful arrays of institutional power – corporate and bi-partisan political – that has appeared in a

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power – corporate and bi-partisan political – that has appeared in a long while. But the American people, spurred on by that burr, Ross Perot, reacted, not necessarily against the facts of this particular issue, rather, against a generation of Republican and Democratic administrations whose policy malfeasance has led to the current American crisis.

Jobs are not created by governments, as the citizens of the totalitarian Communist nations learned, the hard way. They are created by innovative, highly-educated entrepreneurs, with a vision not merely of personal self-interest, but, in addition, the possibility of creating something new. If a society cannot educationally produce such individuals in terms of demographic proportion, it must stagnate and decay.

We in the United States cannot depend indefinitely on our once great educational institutions to attract talented foreigners to learn from our best, and stay on. As the old leadership university faculties die out, they must be replaced. And if not by our own talents, then hopefully, by foreigners, such as the 50 percent of our science and engineering M.A.s and Ph.Ds from foreign shores, willing to stay on and make their own investment in what may be a declining environment for them and their children.

Is There Hope?

When we consider that the most recent literacy and reading achievement surveys published by the U.S. Department of Education show that only between four and six percent of young Americans under the age of 24 score in the top international ranges, the future of American social, cultural, and economic life seems seriously threatened.

Add to this the fact that 40 percent of the whites and between 75 and 80 percent of young Hispanics and blacks are considered illiterate. The latter two groups represent over 30 percent of the cohort. This percentage constitutes the oncoming composition of the adult population of the United States by the end of the present decade (see footnotes 14, 23-25).

Our international economic and political national profile, as we have noted above also reflects this state of decline. The question arises as to the true nature of intellectual and educational potentiality that currently exists in the United States. What must, by addition, be

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proportion of not only the wealth that goes into formal public schooling in the United States is channeled into various bureaucratic functions, but that this heavy hand of control, now politically and ideologically tainted, has had an enormously dampening impact on innovation and achievement.

The urban schools are in an economic, cultural, and educational shambles. Unknown numbers of youngsters of all ethnic backgrounds are trapped in school settings of violence, personal degradation, even hatred for learning, because the courts and the political leadership, because various constraints will not free parents, indeed, children themselves, to accept a voucher to attend a school where an education is still possible.

One of the great ironies of our time is that where so-called voucher initiatives have been put to the ballot, it has, in contrast with earlier decades, been the minorities who have pushed for this form of self-determination and choice. The opposition has come not merely from the entrenched bureaucracies and their politically powerful organizations, but also from middle class suburbanites fearful that their de facto private/public schools would lose some of the existing financial subsidies from the state. In fact all the voucher initiatives, as noted above, have had a monetary value of no more than a third of the comparative education in the average public school.

Another hope for turning around this declining profile of achievement might come out of the call by the teachers unions, among others, for national examinations in certain disciplines, given at three crucial phases in the educational process – 4th, 8th, and 12th grades.

Minority parents and their organizations have tended to resist such suggestions. The most apparent reason for this opposition is that it would tend to validate meritocratic standards, both in subsequent higher education admissions, as well as in the job market. It could thus undermine affirmative action quotas by providing official educational achievement data as grounds for gender, race, and ethnicity discrimination suits by high-achieving members of other groups.

The demographic transformation of the United States is a reality that will have to be dealt with at some point in the next century. Despite the cultural malaise that has affected the tone and discipline

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Despite the cultural malaise that has affected the tone and discipline of the younger generation since the affluent sixties, there must be greater educational potential in a good percentage of those who presently exhibit the current pathetic achievement levels.

What is needed is an unprecedented show of political will power and public voice to create a veritable revolution in the restructuring of the formal system of state schooling. Such a restructuring should have as its goal the release of those natural energies for personal self-mobilization that stand at the source of all educational achievement, individual and national.

Will it happen, and in time to turn around an educational profile rapidly catapulting large portions of the American population into Third World impotence and poverty? Will it occur before the United States is literally torn asunder between two millennially separated social groups: those with the intellectual and educational skills to compete on the highest international levels, those which cannot be duplicated by machines nor minimally educated serfs, and those who will be thrown to the margins to exist on minimum wage crumbs and the ever shrinking welfare "safety net"? Are these the elements for a 21st century American social-political disaster-in-the-making?

The probable source of our intellectual/educational decline goes beyond the school. Truth is, as ever, a precious and rare commodity. Eventually, let us hope before our nation's ultimate physical and moral bewilderment and exhaustion, our leadership will be willing to face up to a reality to which we have closed our eyes.

NOTES

1. Arrests per 100,000 has risen from 225 to 450 in twenty years. 1992, Office of Management and Budget, cited *New York Times*, 14 June. Doug Bandow of the Cato Institute puts the present cost of enforcement of our anti-drug laws at $20 billion per year. 1992, Cato Institute [?], cited *New York Times*, 20 Aug.
AIDS expenditure by the Federal government from several hundred million dollars in 1983 to $5 billion in 1993. See U.S. Public Health Service, 1992 report, AIDS Action Council, cited *New York Times*, 18 Nov.
2. Lapointe, A. E., *et al.* 1992. *Learning Mathematics*. IAEP-ETS. Princeton, New Jersey (Feb.), 16-17. U.S. expends 7.5% of GNP, Israel 10% of GNP on education.
3. These extremely high expenditures and disastrous educational outcomes have led to investigations of corruption both in the Newark, New Jersey schools and longstanding scandals in New York City involving custodian salaries and general bureaucratic waste.

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4. Herrnstein, R., and Murray, C. 1991. "What's Really Behind the SAT-Score Decline?" *The Public Interest*, 32-56.
5. The 1990 *National Assessment of Education Programs*, NAEP. See Shanker, A. 1993. "Where We Stand," *New York Times*, 11 July.
6. Mullis, Ina V. S., *et al.* 1991. "The State of Mathematical Achievement, NAEP-ETS," *National Center for Educational Statistics* (June), 7 ; also Lapointe, A. E., *et al.* 1989. *A World of Differences*, Princeton, New Jersey.
7. Hans Eysenck, in his Introduction to Roger Pearson's *Race, Intelligence and Bias in Academe,* Washington, D.C.: Scott-Townsend, p.22, notes that we thus no longer burn heretics for their revolutionary ideas, but, through control of the media, stifle new ideas through *Todgeschwiegen* (death by silence). The experiences of many writers, most recently, Daniel Seligman, *A Question of Intelligence*, and the author of this article supports this view.
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9. Both the Terman longitudinal survey of gifted children in the 1920s as well as in Julian Stanley's Johns Hopkins University Study of Mathematically Precocious Youth (SYMPY), chose their subjects from the 12-13 year-old cohort.
10. See *The Economist*, 5/15/93, 5/29/93, wherein are presented the statistics for population growth decline.
11. Seligman, Daniel. 1992. *A Question of Intelligence*, New York: Birch Lane, p. 122.
12. *The Economist*, 5/8/93, 72.
13. Gross, J. 1993. "Los Angeles Schools: Hobbled and Hurting," *New York Times*, 10 Feb.
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15. "Adult Literacy in America," *op. cit.*
16. "Adult Literacy in America," *op. cit.*, 113-115.
17. "Adult Literacy in America," *op. cit.*
18. See *New York Times*, 10/03/93, The new good-paying jobs such as at Walmart carry a top per-hour wage of $8, plus benefits. This equals what the average manufacturing worker in the U.S. is receiving, about $17,000 per year. This compares with high-skilled steel workers at Nucor receiving, in 1992, about $36,000 per year, now representing a shrinking proportion of our manufacturing sector.
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Untracking and Cold Fusion: Contrasting Research Demands in the Social and Physical Sciences, and the "Dumbing Down" of American Schools

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Within recent years, incredible claims have been made in the physical sciences with respect to cold fusion, and in the social sciences regarding "untracking," a reform designed to reduce or even to eliminate ability grouping.[1] In this paper, I present evidence that exaggerated claims of cold fusion were quashed by a relatively disciplined scientific community which demanded and obtained specific data which led to the regrettable discrediting of several distinguished scholars, whose data failed to pass scientific muster. Further, I argue that social scientists have not vigorously challenged the astonishing claims of untracking advocates. I also contend that the alleged harm of tracking, and the alleged benefits of untracking, have not only been generally and uncritically accepted within social science, but that such empirically unsupported claims have been employed to endorse schooling reform which, where implemented, "dumbs down" American schools. Further, I contend that the mediocritization of American schools is harmful to America's less experienced students, as well as the nation's most talented and gifted youth.

Cold Fusion: Lavish Research Claims Fizzle

In 1989 the scientific community was astounded by claims of Stanley Pons and Martin Fleischmann of the University of Utah, who reported achievement of nuclear fusion in a simple tabletop operation and at room temperature. A confused scientific world was informed that cold fusion offered a simplistic answer to the frustrating quest for clean, cheap and unlimited energy (Close, 1991; Mallove, 1991). Most scientists immediately expressed disbelief in cold fusion claims;

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requests for specific replicable data inundated Utah. But Pons and Fleischmann failed to provide an acceptable conceptualization for their results and offered only scant details (Mallove, 1991, pp. 55, 63-75; Close, 1991, pp. 11-12). Nonetheless, and because the issue was so significant, hundreds of scientists in dozens of laboratories rushed to study cold fusion. Given limited data, researchers were forced to make various assumptions and, unsurprisingly, initial reports were contradictory. Steven Jones, a physicist at Brigham Young University, reported that his experimental cell produced as many as 1200 neurons per hour, compared with the 40,000 per second claimed by Pons and Fleischmann (Mallove, 1991, p. 59). At the Lawrence Livermore National Laboratory, the fusion flask suddenly exploded, showering the laboratory with shards of glass (Mallove, 1991, p. 69). Scores of scientists publicly pressed Pons and Fleischmann for sufficiently specific data so that responsible replications could be conducted.

Harold Furth, Director of the Princeton Plasma Physical Laboratory, insisted and eventually received critical data regarding light and heavy water cells from Pons and Fleischmann (Mallove, 1991, p. 79). Groused Ronald Ballinger, Professor of Nuclear Engineering and Materials Science at MIT: "The scientific community has been left to attempt to reproduce and verify a major scientific breakthrough while getting its experimental details from the *Wall Street Journal* and other news publications" (Mallove, 1991, pp. 98-99). *Nature*, the respected scientific journal, initially rejected a paper submitted by Pons and Fleischmann because of insufficient data; Pons and Fleischmann then withdrew the paper for further consideration (Mallove, 1991, pp. 44-45). Later, *Nature* headlined an editorial "Farewell (not fond) to cold fusion" (Close, 1991, p. 321). Eventually the cold fusion controversy claimed Pons and Fleischmann as victims of the excessive claims made to a critical scientific community which demanded facts against which claims may be tested through replication (Close, 1991, p. 349). As we shall see, a different, and troublingly lower, level of accountability exists within that branch of social science which is charged with assessing schooling reform.

The Benefits of Untracking: Real or Illusionary?

Untracking advocates have staked claims which are no less extravagant than those once made concerning cold fusion. However, there is one important difference: educational reformers do not face

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the rigorous scientific demands to which Pons and Fleischmann were confronted. Rather, educational researchers are much more likely to successfully ignore, or divert attention away from, requests for data which are sufficiently specific so that valid replicative studies can be undertaken. Consider some illustrations, drawn from comments of leading advocates of untracking reform, who allege not only dreadful consequences of tracking, but also spectacular benefits from untracking of the public schools:

Jeannie Oakes

The contributing editor of a leading educational journal has described Oakes as "the nation's best known expert on tracking" and avers that Oakes has provided a "research-based account of the devastating effects of tracking on public schools" (O'Neill, 1992). Oakes has indeed made remarkable claims regarding the value of untracking (Oakes, 1985, 1993), but it has been impossible to examine the specific empirical basis of the allegations. In 1989, I wrote to Oakes and invited her to participate on a panel which would examine actual evidence of untracking effects; to this I received no response. Nonetheless and over the years Oakes has issued mind-boggling claims regarding the harmfulness of ability grouping; it is odd indeed that her bold assertions have been so little questioned that such claims continue, are issued with increased confidence, and seemingly are granted credibility by educators. A brochure (Education from Yale, undated) promotes a book authored by Oakes and Lipton (1990), and reports that poor and minority children have long been tracked into inferior schools and inferior classrooms, restricting their opportunities for success in American society. Moreover and in various publications, Oakes has used similarly strong and emotionally evocative language. Thus Oakes (1992) cited unidentified studies which "reveal striking track-related differences across the board, with some of the most dramatic evidence showing tracking's particularly negative impact on the opportunities of low income, African American, and Latino students." Seeking replicative data, I wrote to Oakes requesting data and specific citations of the studies. In return, I received a brief note enclosing two recent book chapters concerning track-related differences (Oakes and Lipton, 1991; Oakes, Gamoran and Page, 1992). Oakes averred that "both chapters contain extensive references which *may* (my italics) include books and articles more

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specific to your interests." The Oakes, Gamoran and Page chapter contains 315 references, while the Oakes and Lipton chapter contains 31 citations. Quite obviously, Oakes' response precluded any serious replicative undertaking.

I again wrote to Oakes and requested *specific* citations of the studies she had cited in claiming that tracking seriously harmed poor and minority children. In an undated answer, Oakes suggested that I refer to two additional publications (Oakes, 1990; Oakes, 1992). In fact, the latter reference was the very article which had initiated my correspondence with Oakes. We had now come full circle. In a final effort to obtain data, I prepared an article which identified problems encountered in securing replicative data from Oakes and other untracking advocates (Scott, 1993). In her response, Oakes charged me with failing to comprehend the empirical basis of untracking which, she asserted, had been provided (Oakes, 1993).

Anne Wheelock

Another untracking authority, Anne Wheelock (1992a), has asserted that in schools which untrack, achievement is up for "low" and "average" students, while undiminished and sometimes improved for "high" students. I wrote to Wheelock and requested specific data for replicative purposes. Her reply consisted of a promotional brochure (Available From the New Press, undated) for one of her books (Wheelock, 1992b). This brochure declares that "because texts" (I presume the word "tests" was intended) "constitute better measures of privilege than of innate intelligence" (a topic worthy of separate treatment, as demonstrated by Snyderman and Rothman, 1987), underprivileged children are consistently relegated to the "slow" track. Continuing, the brochure states that tracking thus forces poor children into "a self-fulfilling racist prophesy,"[2] and that poor children are therefore consigned to "inferior education, inequitable resources, and lowered expectations — which all but guarantee their future failure." Further, the brochure refers to the "political and social circumstances" which created and sustain tracking, and proposes the use of Wheelock's views to "eliminate" tracking and thus provide an "equal education for all of our youngsters."

Barbara Nelson Pavan

Still another leader of the untracking movement, Barbara Nelson

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Pavan (1992), cites seven studies which compared students who had spent their entire elementary school years in the same nongraded school (which employed untracking tactics) with those who spent the same years in a traditional school. Allegedly, all seven studies reported superior academic achievement for the nongraded students. Pavan also reported experiments which revealed that blacks in nongraded schools had higher academic achievement than those in graded schools. Further, Pavan cited "research" which indicated that black students in nongraded schools had better self-concepts, and more positive attitudes toward school, teachers and learning, than black students in graded schools. Such claims run counter to data I obtained in similar research (Scott, 1984; Scott, 1991). Therefore I requested specific data and references from Pavan. Since she had reported that some of her citations were in press, I suggested that Pavan simply asterisk references by the various categories for which the various empirical claims have been made. In her answer, Pavan enclosed a brochure (Major New Book: *Nongradedness; Helping it to Happen*, undated), which promotes the book she co-authored (Anderson and Pavan, 1992); Pavan suggested that I refer to the citations which are available in the book.

Contrasting Standards: Research Accountability in the Physical and Social Sciences

This brief review of efforts to obtain sufficient data for valid replicative data reveals certain marked differences between scientific inquiry in the domains of physical and social science. The cold fusion controversy was rather quickly resolved because Pons and Fleischmann eventually yielded to angry and insistent demands for specific data: the demands came from colleagues and from such scientific publications as *Nature*. Vague claims could therefore be matched against statistical reality, and at least quasi-responsible replicative studies undertaken. Conversely, the record indicates that educational reformers can securely assume little if any responsibility for providing specific data, or for that matter even identifying the articles upon which sweeping and often inflammatory claims are based. Indeed, the overall pattern seemingly affirms the view of Chester Finn (1992), former assistant secretary of education, that the (educational) establishment subjects certain perspectives to "skimpy analysis and the present system gets away with something akin to educational

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homicide."

Courts: Basing Rulings on Specious Untracking Claims

Despite the absence of evidence that untracking promotes quality education, some courts have simply assumed that poor and minority children benefit from untracking. In a 1993 ruling viewed as precedent setting, Rockford, Illinois, was court ordered to cease a long-established tracking policy (Walsh, 1993). This practice, which grouped students according to ability, resulted in disproportionate numbers of blacks in low ability classes; whites were disproportionately represented in the advanced programs. Tracking, ruled Magistrate P. Michael Mahoney, resegregates the schools and thus denies blacks the opportunity to participate in honors programs. Robert Howard, a Chicago lawyer who represented the plaintiffs, expressed the hope that the decision will send a "message of hope" to minority parents. Unfortunately all available scientific evidence suggests that the promises of untracking will prove not only illusionary, but harmful. At virtually the time of the Rockford ruling, the Washington Post editorialized that the "widespread resistance" to tracking constitutes a problem, since America's best students (of all races) are underchallenged (Washington Post, 1993).

Untracking: For Educational Quality, Must Decision-Making Shift Away from Educators?

Ironically, as efforts to untrack American schools accelerate, evidence mounts that untracking is not only more widely practiced in American schools than in the schools of other industrialized nations, but is educationally counterproductive.

Recently the staff of England's respected journal, *The Economist* (1992), examined international education and concluded that the world-wide "market revolution" requires that nations take steps to maximally challenge students of all abilities to fully develop their skills. Authors of the survey reported that schools of Europe and of the Pacific Rim employ procedures designed to educate work forces for creation of high value adding jobs. Conversely, American schools were faulted for educating all students without regard to abilities or educational designations. In plain talk, other industrialized nations employ a greater degree of tracking, which is positively associated with educational and industrial productivity.

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with educational and industrial productivity.

Thus, *The Economist* declared that future markets and prosperity will accrue to those who implement what untracking advocates disparage: schools which tailor teaching to student abilities and aspirations, even when this means providing very different curricular strategies to individual students. As someone who attempted to "untrack" when the achievement capabilities of students varied extensively, it is difficult for me to fault the viewpoints expressed in *The Economist*. Moreover, it seems illogical to casually disassociate the decline in the proportion of American students securing *SAT* scores in excess of 650 (Lerner, 1983) with educational reforms which in many cases involved at least significant applications of untracking.

Furthermore, comprehensive research may reveal very specific consequences of untracking as it already exists in American schools. One illustration: At the time that General Motors was warned that its preferred bond rating could fall to the level of junk bonds, GM subcontracted a Japanese company to improve efficiency in its metal die-making operation (Business and Finance, 1992). On a broader scale, the evidence against untracking accumulates. In November 1993, Richard Riley, Education Secretary, endorsed a 3-1/2 year study, identified as the most authoritative examination of educational services for gifted students in more than 20 years (National Excellence: 1993). The major finding: American youths with gifts and talents are insufficiently challenged. Careful not to employ politically incorrect terminology, Secretary Riley avoided specific reference to untracking, of which the educational establishment has become so enamored. But isn't it time to call a spade a spade?

If the analyses of *The Economist* and the recent federal study are correct, Americans can take heart in efforts by the Clinton administration to employ European educational concepts in expanding vocational education and tracking. Present plans call for special programming for the non-college bound. A central aspect of the concept combines the final two years of high school with community college education (Savage, 1992)[3] In reporting on the Clinton initiatives, NBC Evening News (December 12, 13, and 14, 1992) averred that the proposed tracking programs may enable larger numbers of young Americans to become happier and more productive adults. Both untracking advocates and their critics can share that vision.

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FOOTNOTES

1. While teaching in the inner cities of Chicago, the author abandoned the university-inculcated practice of untracking which assumes the vast majority of students can learn at grade level. Therefore and according to this theory, students were to be placed in classrooms irrespective of ability or background. With few if any exceptions, there were to be similar assignments given. I was expected to teach history, under these conditions, to 35 students whose reading abilities extended from second grade through the second year of college. As a young teacher I soon learned the distinction between university theory and classroom reality.
2. Statements such as this suggest that opposition to untracking is based on racism and is indifferent to poor and minority children. If and when such theoretical linkages are made, all bets are off with respect to formulating and implementing responsible and replicatable research in the social sciences which may create greater opportunities for poor and minority students.
3. Many European educators contend that the proposed Clinton initiatives employ tracking too late: in Europe, ability grouping is implemented during the elementary years.

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Success at Getting Grants from the National Institutes of Health by Whites, Hispanics, Asians, and Blacks: Implications for Scientific Creativity

Russell Eisenman
McNeese State University

A study of whites, Hispanics, Asians, and blacks showed that whites were the most successful in receiving grants awarded competitively by the National Institutes of Health. Hispanics and Asians were close behind, while blacks were the least successful. The results have implications for scientific creativity, which often depends upon grant support, and for the view of Jamieson (1993) who said that, based on historical evidence, scientific creativity is linked with the Caucasoid and Mongoloid populations.

Creativity or eminence in science often depends upon winning grants, in order that one's research can receive the support it needs. A large amount of money is awarded via research grants from the National Institutes of Health (NIH). It is probably the chief source of funding for much health research in the United States, including research into psychological or psychiatric issues. A recent study by this agency looked into how whites, Hispanics, Asians and blacks do in receiving grants in competitive circumstances. It is necessary to say "competitive circumstances" because in 1991 NIH spent $89.2 million, or 1.5 per cent of its entire budget on noncompetitive research programs for minorities (Burd, 1993). Thus, NIH tries to help minority researchers succeed outside the competitive process. But, how do minority and white researchers do when the grants are based on competition, with some researchers winning and others losing?

Data from NIH presented by Burd (1993) throws light on the issue of how different racial and ethnic groups do in the competitive fight for grants. However, the article by Burd overemphasizes the point that if some people do not do well it may be due to prejudice against them, and underemphasizes the possibility that, as Jamieson

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(1993) claims, based on historical evidence, some groups may be better than others in scientific creativity. Also, the Burd article presents data for who got the grants and for the success rate of the different racial and ethnic groups, without emphasizing that success rate may be the more relevant variable, since it controls for size of the group in the population. That is, it would not be surprising if whites got close to 90% of the research grants, since they make up close to 90% of the population of the United States. What would be more relevant would be how successful white applicants are vs. the success of minority applicants. There is some reason to think that Asians would do well, since they often show signs of high achievement and intelligence, and often exceed whites in important areas in the United States, such as income and education, and have thus been called a "model minority" (Bell, 1994, Lynn, 1987; Lynn, Pagliari, & Chan, 1988; Stone, 1992; Sue & Okazaki, 1990). In contrast, studies typically find blacks at the bottom in such areas as achievement, scores on intelligence tests, poverty, etc. (Eisenman, 1992a, 1992b; Jensen, 1972; National Youth Employment Coalition, 1991; Reschly & Ward, 1991; Scott, 1988). Perhaps blacks would do better if we look at black M. D.s and Ph. D.s who are attempting to win research grants. This is what the present report addresses, as opposed to most prior research which looks at performance of rather ordinary people (the general population, students, etc.) or of those who perform in ways deemed negative, such as criminals.

Creativity is based on originality plus usefulness (Eisenman, 1991, 1994). Eminence is not the same, since it only refers to social recognition. Someone could have a fairly unoriginal but popular theory and be eminent but not creative. However, eminence and creativity would often go together, especially in the sciences, since original and useful ideas would tend to bring recognition. Thus, it is important to succeed in getting grants, since many scientific research projects cannot be carried out without strong funding.

Method

The National Institutes of Health looked at research grants for the year1991 and listed recipients by race of white, Asian, or black, and by the ethnic group category of Hispanic (Hispanics can be any race and are best thought of as an ethnic group). The data are reported by Burd (1993) in terms of the percentages who got the

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grants and the success rate for each group.

Results

Whites received the highest percentage of NIH research grants in 1991: 89.7% went to white applicants. Asians received 8.1% of the grants, Hispanics 1.5%, blacks 0.4%, and "other" 0.3%. However, a person cannot get a grant if they do not apply. A better record of success for the different groups is the success rate: how successful were they if they did apply for research grants. Here the results show that whites had the highest success rate, with 30.2% of white applicants receiving research grants from NIH. Next most successful were Hispanics at 25.5%, then Asians at 24.2%, and last were blacks at a 15.9% success rate.

Discussion

Whites applicants for research grants from NIH were the most successful. More applied, which is not surprising given the high percentage of whites in the United States population, and more were successful than for any other racial or ethnic group reported on here. It is surprising that Asians were not more successful, given their great achievement in the United States in such areas as education, income, and intelligence test performance. Also, it is surprising that Hispanics were so successful. Of course, the Hispanics and Asians were close behind the white success rate, and the difference of 30.2% (white success rate) vs. 24.2% (Asian success rate) may be largely a chance difference. But, the black success rate of only 15.9% is clearly lower than the other groups.

There is some evidence that despite the large amount of money NIH gives to minorities in noncompetitive circumstances, blacks are not being brought into the competitive system to any great extent. According to Burd (1993), in 1991 only 157 black researchers applied for competitively awarded NIH biomedical research grants, down from 162 black applicants in 1988. Thus, the spending of $89.2 million by NIH to give minorities what are basically noncompetitive research and training grants, does not seem to translate into a lot of blacks applying for the competitively awarded grants, nor in being particularly successful when they do apply.

The results would seem consistent with the viewpoint of Jamieson (1993) about the greater creativity in what he refers to as

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Caucasoid and Mongoloid populations. If blacks cannot win competitive research grants in science, then they are unlikely to produce much creative research. Should anything be done about this? NIH has tried with its noncompetitive awards, but this seems to have had limited success, at least as far as blacks are concerned. It may be that the effects, thought limited for blacks, have produced some pockets of black productivity. Burd (1993) cites Morehouse School of Medicine, a predominantly black school, which has succeeded in winning competitive research grants after first being helped by the noncompetitive ones.

David Korn, dean of the School of Medicine at Stanford University is opposed to granting research awards noncompetitively. He was quoted by Burd (1993, p. A28) as saying: "The research-grant system is based on merit — some people will succeed and others won't. The danger is that the grant system will be thought of as some sought of entitlement program, in which each demographic sub-group believes it is entitled to some share. Once you get into allocation by formula, you've essentially taken a superb merit-based system of support for science and made it into a welfare program." This viewpoint would seem to summarize that of those who oppose special help for minorities, and who would see the superior grant getting performance of whites, Hispanics, and Asians as due to merit. Others find the nonequal results of the grant system suggestive of prejudice against certain groups (Burd, 1993), and look for solutions to help the groups they feel are discriminated against by the system. For example, Ryan (1976,1981) argues that the poor achievement of blacks is due to social circumstances which keep them at the bottom of society.

What is striking about the present report is that it again shows poor performance by blacks, but this time from a population of M. D.s and Ph.D.s, who might have been expected to do better, relatively speaking, than the general black population. Thus, the present findings extend those of earlier researchers to demonstrate poor black performance, even in a highly educated black sample.

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Dental Anthropology and Anthropological-Odontological Types of the Gagaus in Bulgaria

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One group of 100 persons approximately, of both sexes, from the contemporary population of Gagaus from the Kavarna and Balgarevo region was studied according to 13 basic odontological traits with racial-diagnostical and taxonomical significance. It was established that the investigated population is europoid and belongs to the Western odontological stem.

The present work is a part of a more extensive study of different ethnographic and ethnic groups from the contemporary Bulgarian population in anthropological aspect. In addition to somatological and dermatological investigations, currently many investigations are being carried out concerning the morphological structure of human teeth, that are important odontological traits of racial-diagnostic and taxonomic significance (Gagjiev, 1973; Gravere, 1978; Haldeeva, 1979; Kotchiev, 1971; Minkov, 1978, 1979, 1987; Minkov & Boev, 1978; Minkov & Daponte, 1990; Papratskene, 1980; Vachtaeva, 1977; Zoubov, 1968, 1973a, 1979; Zoubov & Halveeva, 1979; Zoubov & Zolotareva, 1980.

Materials and Methods:

A group of approximately 100 individuals from the contemporary population of Gagaus from the Kavarna and Balgarevo region was studied with respect to 13 basic odontological traits of racial-diagnostic and taxonomic significance. Teeth of students (age 12-16 years) were investigated in view of the fact that the morphological structures of masticatory shape of dentition were completely preserved and suitable for anthropological study. Collection and overall treatment of odontological material was done according to A. Zubov's methods

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(1968). Frequency of odontological traits in the investigated group is given as percentage and in radians in Table 1.

Features:	Number:	%	Radians
Crowding	98	6.1	0.50
Diastem	98	25.5	1.06
Shovel-Shaped of I^1-I^1	98	6.1	0.50
Reduction of I^2	98	3.1	0.35
Form of M^2 (3 and 3+)	89	57.3	1.72
Carabele's tubercula (2-5)	97	26.9	1.09
Σ_6M_1	94	3.2	0.36
Σ_4M_1	94	7.5	0.55
Σ_4M_2	94	88.8	2.50
Distal crest of trigonid	95	7.4	0.59
Deflecting wrinkle of metaconid	95	6.3	0.51
T A M I	97	4.1	0.41
Furrow 2 med(II)	83	48.2	1.53

Table 1. Frequency of the odontological traits of the contemporary population from Bulgaria, % and radians

Results and Discussion:

The frequency distribution of odontological traits and the degree of their variation are as follows:

Diastema:

On the basis of the results of odontological investigations, it is established, so far, that the racial-diagnostic significance of diastema contributes most effectively in the study of regional groups that are close in racial and territorial aspect and also of separate isolates. Frequency of diastema is quite high (25, 5%) in an explored group of Gagaus and is within the limit of Europoid populations.

Crowding:

It is a significant diagnostic trait of teeth's morphological

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structure which appears more frequently in mongoloid groups (Eastern odontological stem). In the investigated group of Gagaus, crowding has medial concentration (6, 1%) and accordingly the explored population is assigned to the Western odontological stem.

Shovel-shaped upper medial incisors:

This trait (total frequency of forms 2+3) is one of the most important odontological traits of racial-diagnostic and taxonomic significance. Its highest frequency worldwide is observed for North American Indians, Eskimos, the Chinese and Mongolians (Zoubov & Zolotareva, 1980). Lowest frequency of shovel-shaped upper medial incisors (close to zero) is established on the territory of Litva and Latuania (Gravere, 1978; Papratskene, 1986). In the explored group of Gagaus, frequency of the shovel-shaped upper medial incisors is intermediate (6, 1%) and is within the limits of the Western odontological stem.

Reduction of the lateral incisors:

Frequency of reduction of I^2 is comparatively low. World-wide it shows wide range as within the dimensions of huge races. This trait indicates highest frequency among some populations of Central America and Eastern Siberia (about 12, 0%) (Zoubov & Haldeeva, 1989). Reduced forms of upper lateral incisors are of great interest when exploring anthropologically close local groups. In the explored group of Gagaus, reduction of lateral incisors indicates medial concentration (3,1%), which is characteristic of European populations.

Reduction of hypoconus of second upper molars M^2:

The present trait is not directly related to the major races and therefore its taxonomic value is not very high. Nevertheless frequency of reduction of hypoconus of M^2 is significant in investigations of close local groups. In the studied group of Gagaus, the concentration of the present trait is quite high (57, 3%), which is characteristic of Europoid populations.

Tuberculum Carabelli:

This trait takes an important part in racial taxonomy, and is

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used as a marker of Europoid groups among which is established its high frequency. In odontological investigations it is used as a separate trait -fen - from Western odontological stem's complex. In the explored Gagaus group, the frequency of Tuberculum Carabelli shows comparatively low value (26, 9%), but is within the limits of the Western odontological stem.

Shape of the lower molars:

Frequency of six tubercular forms of first lower molars (Σ_6M_1) is higher in mongoloid groups and considerably lower in Europoids. In explored Gagaus groups, concentration of this trait is moderately expressed (3, 2%), and is within the limits of the Western odontological stem.

Four-tubular forms of first lower molars together with the latter trait have high taxonomic value and are widely used in interracial and intraracial differentiation of Europoid and Mongoloid groups. It is observed that high frequency of Σ_4M_1 and low concentrations of Σ_6M_1 occurs in representatives of Europoid groups, while in Mongoloid groups it is observed in the reverse correlation. In the explored group of Gagaus, frequency of four-tubercular first lower molars is comparatively high (7, 5%), which characterizes it as a Europoid population.

Four-tubular second lower molars are characterized with high concentration in the groups from the Western odontological stem (80%-90% and more). Concentration of the trait shows quite high value (88, 8%) in the explored group, which characterizes it as a population belonging to Europoids.

Distal crest of trigonid:

The indicated trait is assigned to the features of high taxonomic value with "Eastern" characteristics and is used as a fen marker (Zoubov, 1980). In the investigated Gagaus group, frequency of distal crest is comparatively high (7, 4%), and accordingly the studied population is assigned to the Western odontological stem.

Deflecting wrinkle of metaconid:

This trait is of high taxonomic value with "Eastern" characteristics and is widely used in investigations of ethnogenetic character. Mongoloid groups are distinguished for this trait's highest concentra-

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tion (above 50%), while Europoids are distinguished for the lowest. Frequency of deflecting wrinkle is moderately high in the investigated group (6, 3%), which indicates that the studied population is essentially Europoid.

TAMI (tuberculum accesorium mediale internum):

So far, on the basis of odontological research, the opinion is expressed that Negroids from East Africa are characterized by a high frequency of this trait, while its low concentration (up to 10%) is characteristic of the populations of Siberia, Middle Asia, and East Europe (Vachtaeva, 1977; Haldeeva, 1973). The frequency of TAMI in the investigated Gagaus group is comparatively low (4, 1%) and characterizes the present population as Europoid.

Furrow 2 med(II):

This trait is one of the basic odontoglyphic features of high taxonomic value with "Western" orientation and is widely used in differentiation of local differences between racial types. Frequency of 2 med(II) in the investigated Gagaus group's quite high incidence (48, 2%), which characterizes it as a population from the Western odontological stem.

From the analysis of the odontological traits frequency and their grouping in complexes, the studied Gagaus group is characteristic with the Middle European odontological type with components of the South Gracile type.

The Middle European odontological type is due to a weak reduction of the lower molars, low deflecting wrinkle percentage, low frequency of sixth tubercula, comparatively low percentage of shovel-shaped upper medial incisors and moderately high frequency of forms 3 and 3+ of second upper molars.

The South Gracile type is manifested with decreased frequency of tuberculum Carabelli and slightly increased percentage of distal crest of trigonid.

Conclusions

On the base of the received results and their analysis, it was established that the Gagaus belong to the Western odontological stem according to the odontological traits frequency.

This concentration of the features with "Western" characteriza-

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tion is relatively high in the examined Gagaus group (typical for a Europoid population) with the exception of tuberculum Carabelli, frequency of which is decreased in the studied population. It was established that the examined Gagaus group from Bulgaria is characterized by Middle European and South Gracile odontological types.

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SHOCKLEY ON EUGENICS AND RACE

The Application of Science to the Solution of Human Problems

By Roger Pearson

Preface by Arthur R. Jensen

CONTENTS

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Positive Correlations between Brain Size and Intelligence: Further Evidence from India

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Two hundred 9-year old Indian children were given the Progressive Matrices, a vocabulary test, and 4 simple music tests. Head circumference, height and weight were also measured. There were generally positive correlations between the cognitive measures and head circumference, but with age partialled out only the correlation with the Progressive Matrices remained statistically significant. The results indicate that a large brain confers an advantage for the performance of the complex problem solving tasks of the Progressive Matrices, but less of an advantage for the simple tasks of the music tests. Considered in evolutionary terms, the results suggest that the hominids evolved large brains in order to solve complex tasks.

During the last 4 million years or so the brain size of the hominids has increased from around 600 cubic centimetres among the Australopithecines to a mean of around 1,400 cubic centimetres among contemporary *Homo Sapiens* (Beals, Smith and Dodd, 1984). It is generally agreed that this increase was associated with an increase in intelligence, consisting of greater ability to solve cognitive problems, to learn and to remember. Greater intelligence must have conferred a selection advantage, and this would explain the progressive increase in brain size.

It is an interesting and disputed question whether a larger brain among contemporary *Homo sapiens* continues to confer greater

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intelligence than a smaller brain. It has been asserted that no such correlation exists by Beals, Smith and Dodd (1984), Henneberg (1990) and Cain and Vanderwolf (1990). On the other hand, the existence of a positive correlation has been claimed by Rushton (1990) and Lynn (1990). All studies reporting such an association have been carried out in North America and Europe and are summarized in Lynn (1990) and Rushton (1990). In this paper we explore two questions:

(1) Is a large brain associated with greater intelligence among contemporary populations? This can be tested by examining whether a positive correlation is present between brain size and intelligence.

(2) Is a large brain associated with greater intelligence for some cognitive abilities but not for others?

It seems likely that the large brain evolved in hominids in order to solve complex cognitive problems and therefore that brain size may be positively associated with the ability to solve complex problems, but not with the ability to solve simple problems. Small brained animals can master simple cognitive problems such as the location of their nests, the identity of their mates, the distinction between edible and brained animals like fish and birds can solve simple discrimination problems involving the discrimination between, say, a square and a cross, but only primates and possibly dolphins can solve complex discrimination problems involving the arbitrary reversal of these from one day to the next, known as one trial discrimination problems (e.g. Mackintosh, Wilson and Boakes, 1985). It may be that a large brain in man confers no advantage for the performance of simple cognitive tasks but does confer an advantage for complex tasks. In order to test this hypothesis we examine the relationship between brain size and the performance of tasks of varying degrees of complexity.

Method

The subjects were 100 boys and 100 girls (mean age 119.2 months, sd 4.8), obtained from primary schools in a middle class district of the city of Kurukshetra in northern India. All the children

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	Boys' Mean	SD	Girls' Mean	SD	Mean SD
Age-months	120.4	4.3	118.0	5.1	3.6^{xx}
Progressive Matrices	36.5	9.2	33.9	9.1	2.0^{x}
Vocabulary	19.0	4.0	17.7	4.4	2.1^{x}
Height (cms)	136.5	7.3	135.7	8.6	0.7
Weight (kg)	30.8	5.2	29.9	4.3	1.4
Head Circum. (cms)	53.9	1.5	53.1	1.6	3.6^{xx}
Pitch	9.1	3.2	10.2	2.8	2.6^{xx}
Tunes	5.6	2.4	5.4	2.4	0.6
Chords	7.3	2.9	6.8	2.7	1.0
Rhythm	6.1	2.0	6.3	1.6	0.8

Table 1: Descriptive statistics for the sample.

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	Age	PM	Voc	Ht	Wt	HC	P	T	C	R
Age	-	27	33	23	18	14	17	12	16	33
Progressive Matrices	21	-	43	01	16	14	26	31	13	33
Vocabulary	26	48	-	-12	26	10	41	64	03	50
Height	27	16	02	-	51	33	-03	-06	19	00
Weight	27	-31	12	54	-	39	22	24	07	22
Head Circumference	31	25	12	42	45	-	03	07	21	06
Pitch	16	06	34	02	11	10	-	55	10	40
Tunes	15	20	60	-11	21	07	50	-	03	55
Chords	08	18	09	14	01	10	00	-13	-	07
Rhythm	17	11	41	16	25	15	38	43	-02	-
Head Circumference (sexes combined)		19	11				06	07	15	10
(age partialed out)		15	05				03	04	13	05

Table 2: Correlation matrix: boys above diagonal, girls below diagonal (decimal points omitted). Correlations of 20 and above are statistically significant at the 5 per cent level. Last two rows give combined samples. Correlations of 14 and above are statistically significant at the 5 per cent level.

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were given the Standard Progressive Matrices, the Mill Hill Vocabulary Test and the Bentley Test of Musical Abilities (Bentley, 1985), consisting of 4 subtests measuring discrimination of pitch, tunes, chords and rhythm. The pitch discrimination task is the easiest and entails determining whether the second of two tones is higher, lower or the same as the first. The tunes test consists of a short melody of up to 5 notes; the melody is then repeated with one or no notes changed and the changed note (if any) has to be identified. The chords test consists of 2 to 4 notes played simultaneously and the number of notes played has to be identified. The rhythm test consists of 4 beats which are repeated with one beat changed or with no change, and the change (or no change) has to be identified. Also measured were height, weight and head circumference measured at its maximum just above the ears.

Results

Descriptive statistics of the sample are given in Table 1. The lowest and highest ages were 103 and 126 months. The boys were on average 2.4 months older than the girls and generally score slightly higher on the cognitive tests commensurate with this age advantage. The exception is the pitch discrimination test, where girls scored significantly higher. We do not believe this sex difference has been reported before.

Product moment correlations were calculated between all the variables separately for boys and girls and are shown in Table 2. The correlations can be averaged to obtain correlations for the total sample. These are given for head circumference x the intelligence measures in the penultimate row of Table 2. Finally, because age is correlated with both head circumference and the intelligence measures and can be considered as causal to both, it seems proper to partial out age. The final row gives the partial correlations of head circumference x the intelligence measures for the total sample.

Partialling out age reduces the correlations between head circumference and the intelligence measures. Only the correlation with the Progressive Matrices remains statistically significant at 0.155. This correlation can be corrected for the unreliability of the test and for head circumference as a measure of brain size. The reliabilities are 0.78 and 0.80 (Raven and Court, 1989, Brandt, 1978). Correction for these unreliabilities gives a true correlation for Progressive

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Matrices and brain size of 0.20 and is statistically significant at the 5 per cent level.

Discussion

There are two interesting features of the results. Firstly, they confirm for this Indian sample the existence of a low but statistically significant correlation between brain size and intelligence as measured by the Progressive Matrices found in American and European samples. Partialling out age reduces the correlation, but it remains statistically significant. Secondly, the correlations between head circumference and the other intelligence measures are all non-significant, although they remain positive. We interpret this as suggesting that a large brain facilitates the performance of the complex problem solving tasks of the Progressive Matrices, but not the simpler task of defining word meanings or the elementary cognitive processes involved in the music tests. Perhaps the brain in this respect resembles the computer. Large ones are required for the performance of complex tasks, but small ones are just as efficient for the performance of simple tasks. From an evolutionary perspective, we believe our results confirm the hypothesis that the hominids evolved large brains in order to solve complex tasks.

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Intelligence and National Achievement

Editor
Raymond B. Cattell

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Understanding Caste In India

Subhash Kak
Louisiana State University, Baton Rouge

When viewed broadly, social relations in society can be seen as mimicking technology. Past few centuries have seen the focus of technology to change from clocks to steam engines to computers. Paralleling this was the change in science from Newtonian mechanics to thermodynamics to the holistic views of quantum mechanics and information theory. The contemporary age is the age of computers and information. Science and technology have seen a shift from the simple to the complex. Societies have changed from the feudal to the democratic and we see new developments that have been called post-modern. This path has led to increasing consolidation, although one sees signs of a coming fragmentation. One would expect that social organization would now be based on symbols and information. The massive movements of people since the Second World War has also ensured that ethnic diversity within states will compel such societies everywhere to confront multiculturalism.

Ancient Indian society had information and symbols as its focus. This happened because the science of the mind was the most prized science in ancient India. Cognitive science is considered a major frontier of modern science. This science is being studied only with respect to the individual but also social groups. Individuals use language to express themselves; social organizations also represent a language that reflects the cognitive categories of the society. Social structure codes societal processes. No living structure can be based on closed categories.

Caste has been often seen through the dichotomous categories of Newtonian mechanics. We wish to show that its proper understanding can emerge only if a holistic paradigm is used for its analysis.

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Actors and Agents

Europe's successes in the past few centuries were undoubtedly due to the technology, science, and organization that were stimulated further by the discovery of the New World. The colonial successes of Europe were facilitated by a mastery not merely of technology but of signs. As sailors and traders the Europeans learnt to appreciate the power of signs. On the other hand, the old civilizations were so inwardly focused that there was a refusal to learn the language of the outsider.

Since then other unintended consequences of the mastery of signs have come to light. The interpretation of signs into European languages could not have been a one-way process. The native interlocutors were themselves interpreting the facts in order to conform to the expectations of the interrogators. The analysis that emerged was thus based on many false premises. Nevertheless, in the post-colonial era the native elites, now properly literate only in the European languages, have embraced this analysis. This is a fascinating illustration of how representations can alter reality. This prefigures the change in the self-image in the West by the images fostered by television and the media.

As example consider the Brahmin caste. Books by Indologists routinely translate this into priest. But in reality priests have a relatively low status in India. To give an extreme example, the Mahabrahmin priests, who supervise funeral services, have been "treated much like untouchables." The reality of status is highly paradoxical; the brahmin is respected if he renounces his expected function. The reality runs counter to the claims of generations of Indologists.

Theories of Caste

There is no synonym for caste in any Indian language. The Indian words that caste supposedly translates are *jāti*, which means a large kin-community or descent-group, and *varna*, which implies a classification based on function. The word *varna* is from ancient Sanskritic theory and it has no real relevance to today's society; the word *jāti* properly denotes what may be termed as a group bound by customs and traditions. The dynamics between the jātis has been influenced a great deal by historical and political factors. During the periods of economic growth, the jātis have been relatively open--

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ended; during periods of hardships the jātis have tended to draw in for the sake of survival. The word 'caste' comes from the Portuguese *casta*, a word that was meant to describe the jāti system, but which slowly has come to have a much broader connotation.

Megasthenes, the Greek ambassador to India about 2,300 years ago, noted the existence of seven classes, namely that of philosophers, peasants, herdsmen, craftsmen and traders, soldiers, government officials and councilors. These classes were apparently jātis.

The jātis were integrated into a cooperative system where each had a role and was cared for. One could consider it as a kind of a decentralized social security system where contracts were negotiated within the *yajamāna* (*jajmani*) framework. The dominant caste provided basic necessities to the other jāti groups in exchange for services. The activities in the village could be viewed as a symbolic ritual where the yajamāna was the patron. The yajamāna system is thus based on the recognition by the dominant group that it is a part of a larger community and therefore it has an obligation to support the other communities.

Rigveda 10.90 speaks of the Brāhmana, Rājanya (Ksatriya), Vaiśya, and Śudra as having sprung from the head, the arms, the thighs, and the feet of Purusa, the primal man. This mention of varnas has been taken to indicate that a caste system existed in the Vedic times. But it is repeatedly mentioned elsewhere that each human is in the image of the Purus a which would indicate that each human internalizes aspects of all the varnas. Many texts proclaim that one's nature alone, and not birth, determines to which varna one belongs. It is generally agreed that in the ancient Aryan society the varnas were functional groupings and not closed endogamous birth-descent groups. Basham (1967, p.148) suggests that the jāti system in its modern form developed very late. The Chinese scholar Hsu an Tsang in the seventh century was not aware of it. As a response to historical events one might then credit the emergence of the modern jāti system to the next fundamental change in the Indian polity that occurred with the Turkic invasions.

In its long history, India has had diverse social and religious currents. It is only in the exception that the reality has conformed to the theory of the Dharmashastras. The Vaishnavas emphatically define varna based on one's actions. Bhāgavata Purāna 7.11 proclaims clearly: "One's nature alone determines to which varna one

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belongs". The Tantrists claim that all those who accept the Kula (Tantric) dharma become Kauls (Mahānirvāna Tantra 14.180-9).

What is Caste in India?

If one limits oneself to an analysis of the term jāti, one would see that its implications have varied with history. Many scholars believe that the system of jati that exist now emerged only about a thousand years ago. If we accept that view then this emergence was perhaps a response to the catastrophic disruption to legal and political institutions caused by the Turkic invasions. With the destruction of the previous political order, different occupational communities created their own systems of justice and governance. In this situation, a local social structure developed which centered about the dominant community.

Although jātis may pay lip service to the Brahmin as an intermediary to the gods when it comes to ritual, each caste considers itself to be the highest. If the Brahmins were to be accepted as the highest caste then other castes would have no hesitation in giving their daughters to the Brahmins. But in reality they do not. The Rajputs consider the Brahmins to be otherworldly, or plain beggars; the traders consider the Brahmins to be impractical; and so on. In classical Sanskrit plays, the fool is always a Brahmin. In other words, each different community has internalized a different outlook on life but these outlooks cannot be placed in any hierarchical ordering. The internalized images of the other must, by its very nature, be a gross simplification and it will never conform exactly to reality.

The Question of Pollution

Dumont (1970) claims that the castes are separate but interdependent hereditary groups of occupational specialists. He postulates that the principle of purity-impurity keeps the segments separate from one another. In this supposedly uniquely Hindu system each jāti closes its boundaries to lower jātis, refusing them the privileges of intermarriage and other contacts defined to be polluting. Facts belie the Dumont theory: Indian Muslims and Christians also have castes. The eighteenth century German society was divided into princes, nobles, burghers, peasants and serfs between whom no marriage other than morganatic was possible (Zinkin 1962). Korea and Japan also

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had the practice of untouchability.

Part of the mystification of the Indian social system has occurred due to a flawed understanding of the notion of ritual. Hindu ritual is meant to capture the connections between the human and the cosmic and highlight the paradoxes of separation and unity. Ritual is a symbolic representation of basic analytical knowledge where the context of the knowledge is not widely known (Kak 1993). A normative social structure is acknowledged to be arbitrary and meant to be broken. The outsider has tended to assign an importance to ritual in Indian discourse unwarranted by reality. The understanding of pollution, and its relation to ritual, has varied across region and age.

Quigley (1993) notes that the notion of caste is a very complex one. Ideologies of materialism, that considers caste as a rationalization of social inequality, and idealism, in which caste is taken to represent notions of relative purity, are incapable of providing adequate explanations. In recent decades the idealist position, presented by sociologists like Louis Dumont has become the dominant one. According to Quigley:

> [The] practitioners of [recent anthropology] cling on to the flotsam of a theory which their own evidence devastatingly undermines. Unable to visualize a general structure of caste which would displace Dumont's theory, they hang on to it unremittingly even though their own evidence shows again and again that this theory simply does not explain what is known about India... The entrenched idea that "Brahmans are the highest caste" has done most to hinder an alternative formulation of how caste systems work. (Quigley 1993)

Quigley bases his own analysis on the relationships between the king and the priest, defined very early in the Vedic times, which has recently been examined by the Dutch scholar J.C. Heesterman. This analysis defines the role of castes in terms of relationships with the dominant economic and political groups. But ultimately such an approach is unsatisfactory because the Vedic texts describe the relationship between the priest and the king in relation to ritual. To use the theory of such relationship for the secular world is not quite correct. Few Brahmins were ever priests; also there have always been

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non-Brahmin priests.

Coda

One might wonder why the caste system developed in India. It has been argued that European and Western traditions, owing to their exclusivist nature, set out to obtain uniform beliefs and practices. The inclusivist nature of the Indian religions, on the other hand, places each group in a larger system.

Marriott (1976) claims that Indian society is highly transactional: the giver is of superior rank to the receiver and the served is superior to the server. But this leads to contradictions: Is the Brahmin beggar receiving or being served? Kolenda (1978) claims that a caste is an endogamous descent-group. She expects a new system of competitive descent-groups will replace the system that was characterized by localized hierarchy owing to the isolation of the village. But as before there will be several ideologies behind the impulse to form new communities.

Srinivas (1962) pointed out that the process of Sanskritization is responsible for movement within the jāti system. Sanskritization implies emulating a dominant caste of any high varna. One should add that there also exists the dynamic of fragmentation. Ancient Indian political theory speaks of an opposition between settled community (*grāma*) and wilderness (*aranya*) (Heesterman 1985). Even during the Mughal rule there was a similar divide between the revenue paying region called *ra'īyatī* and the rebellious known as *mawās*. There has existed such a divide in terms of the belief system as well. Various movements have sought to overturn the varna system. In recent times, the institution of quotas has prompted many groups to seek classification as "low" caste.

The social structure of India reflects no single ideology which is why no single theory has proved to be rich enough to describe the system. The system represents several symbiotic ideologies. These ideologies are balanced by political and economic forces. The ideologies of the brahmin, the aristocrat, the trader, and the commoner were all proclaimed to be equivalent in their effectiveness in obtaining knowledge: this was reflected in the paths of jñāna yoga, karma yoga, rāja yoga, and bhakti yoga. Even festivals like Sarasvati puja, Dassera, Divali, and Holi celebrate the different attitudes.

New technology, science, and political organization will change

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the social institutions of India. In many ways the modern Indian castes are no different from the ethnic communities in the West. The societal organizations of the West and the East can thus be seen to converge.

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The Origin of the Bharat Dance

S. Soundarapandian
Madras University

Bharat dance, a classical dance, is popularly known as *Bharat natayam* in India. Tamilnadu (the extreme south of India) claims its origin. The counterclaim is that it may have originated in Kashmir.There is also the belief is that the name may have come from the sage *Bharat*, who wrote the source treatise.

Bharat dance is particularly appreciated for its gestures (*abinayas*) and foot work meant to convey emotion and passion. It is danced to a calculated rhyth (*thalam*) generally believed to have originated in the second century B.C.

Specialties and Peculiarities

The principles that must be adhered to in *Bharat* dance may be listed as follows:

1. The head is not moved haphazardly;
2. The chest is not twisted;
3. The hip is not distorted;
4. The legs are bent at the knee to either side;
5. The leg is raised to only the knee level;
6. The hand is swiftly pulled towards neck and extended in the same straight line;
7. The head is moved sideways only in a straight line;

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8. The dancer's eyes follow the movement of her hands;

9. The legs and hands move only in a highly controlled manner;

10. Footbells are worn on the ankles.

The Origins of the Dance

Many treatises, old and new, mention the above ten principles. They lay down rules for all ten, appreciating the aesthetic points in them. But why did these principles enter in *Bharat* dance?

If we analyze the above ten technicalities, they will lead us to our goal, namely, to indicate the place of origin of the dance.

(1) Head movements are restricted in *Bharat* dance. The dancer should not move her head as she likes. She should not tilt her head while doing foot work or other movments.

Such restrictions suggest that the *Bharat* dance is a developed form of a folk dance called *Karahattam* – a dance conducted with a *Kumba*, pot, or jar, balanced on the head.

While the *kumba* (an earthenware or brass vessel filled with flowers or fruit, and decorated on the exterior) is balanced on the head of the dancer, she cannot move her head freely. If *Bharat* dance developed from this, this would explain why the same requirements which control the movements of a women carrying a jar on her head entered into *Bharat* dance.

(2) Since the *kumba* (also known as *kalasa*) is balanced on the head, the dancer of *Karahattam* cannot shake her chest. If she did, the *kalasa* would fall.

Bharat dance is essentially a sophisticated form of *Karahattam* and chest movements are also restricted in *Bharat*.

(3) Keeping a *kumba* on the head while dancing the *karaha* dance (*Karahattam* in the Tamil language) requires that all hip movement should be done meticulously. This careful control

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of hip movements can be well seen in *Bharat* dance.

Moreover, the two hands of the dancer are often kept on the waist to keep the balance of the *kalasa* on the head in *Karahattam* dance. This pose is also frequently adopted in the course of *Bharat* dance.

(4) A scintillating peculiarity of *Bharat* dance is that the dancer keeps her legs flexed sideways. This outward turn of the leg bent at the knee is typical *Bharat* dance posture.

Its purpose was to keep the pot balanced head in a balanced position. Movement with straight legs may more readily disturb the carrier's balance. Moreover, while a pot is on the head, the dancers choice of shaking or moving her body is limited; so she had to limit her movement by without lifting or throwing the legs apart.

(5) *Adavu* is the beginning stage in *Bharat* dance. Teachers instruct dancers not to lift their legs higher than the knee level and only one leg at a time. This again served to keep the pot balanced on the head.

(6) In *Alarippu* (a stage for beginners), the hands are turned vertical to the body. They are then one at a time brought towards the neck, and released swiftly in the same straight line. Such a careful movement in one and the same line also suggests that once upon a time they danced with a *kalasa* on the head.

Even after the *kalasa* was removed from the dance procedure, the hand gestures remained as they were, for such gestures had come to be approved and expected by the spectators.

(7) The beginner will be taught, carefully and without trembling, to hold her head first a little to the left side, then straight ahead and later a little to the right side, then back to the original posture in one and the same line. The dancer is taught to move her head vertically in a straight line because the dance was once performed with a pot on the head. This

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tradition likewise found its place in *Bharat* dance.

(8) The eye of the *Bharat* dancer should follow the hand wherever it goes during the dance. This is a peculiar and distinct feature in *Bharat* dance. This could be explained by the need for a dancer who was balancing a *kalasa* on her head to move her hands very carefully so that her hand gestures might not upset the head balance. Good technique requires that the dancer's eye muscles and eye vision move along with the hands, so that she can more effectively maintain her head balance.

(9) Another important technique in *Bharat* dance is that the legs and the hands move only to a calculated beat. Hand, palm, toe, knee and other body parts should cooperate in all gestures of *Bharat* dance. This ensured that all movements were in accord with the music.

(10) A leather strap with tiny bells is affixed to the ankles of the *Bharat* dancer. Footbells are necessary to the *Karahattam* dancer. This similarity hints at the origin of the *Bharat* dance. Even after achieving an advanced level of sophistication, the *Bharat* dancer retained the old footbells because the dramatic jingling sound of the bells added lustre to the dance. The old folk practices of *Karahattam* dance survived.

Conclusion

All these aspects eventually lead us to the suggestion that *Bharat* dance must have originated from the old *Karahattam* folk dance.

Etymological Evidence

Furthermore, the name *Bharat* does not have to denote any *guru* or original inventor. The word "*Bharat*" could be a corrupt form of *paraththai* a Tamil word for a woman belonging to a dance community. In former days it was mainly such *paraththai* women who indulged in public dancing. Even in the early 19th century, the so-called *Bharat* dance was known as *Thevadiyal Kutcheri*, Tamil for "a

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performance by *Thevadiyal*." Again, *thevadiyal* means the same as *paraththai*. So, *Bharat* dance would not have been the product of any *Bharat muni*, although someone may have written a later treatise on the subject.

Since *Karahattam*'s birth place was Tamilnadu, and even today Tamilnadu preserves this traditional dance form, *Bharat* dance may well have originated Tamilnadu by derivation from *Karahattam*. This probability is worthy of further research.

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BOOK REVIEWS

Living Within Limits:
Ecology, Economics and Population Taboos
Garrett Hardin
Oxford University Press, 1993

Garrett Hardin is Professor Emeritus of Human Ecology at the University of California at Santa Barbara. For Hardin, the major problem bedeviling the world is rampant overpopulation. A close second is the mental paralysis caused in the West by a lack of clear-thinking. Since his landmark paper "The Tragedy of the Commons" (*Science*, 162 1968), Hardin has been at the forefront of critics of irrational foreign aid and uncontrolled immigration, where misdirected policies only serve to spur the momentum of world population growth. Common sense backed by solid scholarship in a highly readable package are the trademarks of Dr. Hardin's latest book *Living Within Limits: Ecology, Economics, and Population Taboos.*

Concerning the ongoing Third World population explosion, modern policy-makers, Hardin warns, should use three lenses: literacy – what are the proper words to discuss the problem; numeracy – what are the relevant numbers to measure the problem? and "ecolacy" – the readiness to ask the question, 'And then what?' when a possible course of action has been suggested. Hardin has always been ready to ask the difficult question, 'And then what?' in the face of currently trendy policy proposals. While the populations of some of the more progressive nations actually decline, most Third World nations continue to expand their population (aided by Western medicine and financial aid) at hitherto unprecedented rates, destroying the environment in the process and migrating in increasing waves into other parts of the world where the same process of environmental degradation due to overpopulation also begins.

> Anyone who tries to comprehend the spirit of our times is soon impressed with the popularity of guilt-mongering – making other people feel guilty about something ... In the first half of the

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> twentieth century, anthropologists taught people to be ashamed of ethnocentrism. So successful were they that some guiltmongers have now gone to the extreme of becoming *ethnofugalists*: they see virtue only in people other than their own kind. Often the greater the *otherness*, the greater the asserted virtue and beauty.
>
> Like compulsive and universal altruism, ethnofugalism tends to destabilize a society. (p.306)

It is this misdirected altruism that provides much of the zeal that inspires some who promote the ideology of multiculturalism – quite apart from the convenient excuse it gives them to avoid the trouble of defending their own society against invaders from the overpopulated areas.

Overpopulation & Foreign Aid

Hardin calmly and clearly explains the results of a world population which, in many areas, has exceeded the carrying capacity of the environment. He shows us how to read the story that all too often is hidden by newspaper headlines:

> I was in Calcutta when the cyclone struck East Bengal in November 1970." Estimates indicated that half a million people perished. "What killed those unfortunate people? The cyclone, the newspapers said. But one can just as logically say that overpopulation killed them. The Gangetic delta is barely above sea level. Every year several thousand people are killed in quite ordinary storms. If [Bangladesh] were not overcrowded, no sane man would bring his family to such a place. Ecologically speaking, a delta belongs to the river and the sea: man obtrudes there at his peril. Were we to identify overpopulation as the cause of a half-million deaths, we would threaten ourselves with a question to which we do not know the answer: How can we control population without recourse to repugnant measures? Fearfully we close our minds to an inventory of possibilities. Instead, we say a cyclone caused the deaths, thus relieving ourselves of responsibility for this and future catastrophes." (p.250)

Hardin dissects a full-page ad published by Computerland in 1985.

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> After praising the popular musicians who had put out the 'We are the World' record, which garnered millions for the relief of hunger in Africa, the ad writers acknowledged that the 'Sub-Saharan regions are deforested and severely over-farmed.' A biologist would immediately infer that the region was overpopulated; but that is not the way of the commercial world. Instead, the ad said: ... 'Answers needed to eliminate the causes of hunger can only be created through ... an innovative way of establishing grain reserves in critical areas,' How, one might ask, can reserves of grain be created by a nation in which the yearly demand is greater than the yearly supply? One knows the presumed answer in advance : reserves are to be created by the transfer of grain from the rest of the world. For more than two decades distributing imported grain has been the policy of OXFAM, Food First, and several other charitable organizations. Following each well-intentioned intervention the recipient population has continued to grow, thus increasing the need when the next disaster strikes." (p.251).

Overpopulation and Immigration

Effortlessly, Hardin explodes some of the most cherished stock arguments used in favor of the all-out Third World flood now engulfing both the U.S. and Canada: "A prime danger to continued national survival is uncontrolled immigration, which unquestionably increases unemployment," he warns. "Long continued unemployment *produces social disorder. If it were true (as some journalists maintain)* that immigration actually increased employment, then we would do well to invite all the world's two billion wretchedly poor to come into our country, No advocate of immigration has yet had the nerve to suggest that we do this. So, we should take with a bucket of salt all claims that immigration has no adverse effect on employment." (p.288)

Hardin continues:

> Many people welcome immigrants from poor nations because they anticipate that this generous action will reduce poverty in the sending nation. The argument presumes that the resources-population ratio in the poor nation would become greater following out-migration. As far as it concerns straight numeracy the argument is sound: but the ecolate question must be asked: 'And then what?' What effect does the departure of the emigrants have on the

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fertility of those who stay behind in the old country? ... A typical poverty-ridden population doubles every twenty-five years or less. Not to be forgotten are the remittance payments sent home by emigrants, Indians, Pakistanis, and Africans work in the oil fields of the Arabian peninsula, sending much of their wages home to their families. Emigrant men generally manage to visit home a time or two during the year, thus seeing to it that more babies justify their remittances. Mexicans migrating to the United States generally follow the same pattern. The end result is that some of the wealth produced in rich countries finances population expansion in poor countries. Since most poor countries are already suffering from deforestation, soil exhaustion, and other consequences of overpopulation, the end result of the emigration-and-remittance system is a further degradation of natural resources. A generous immigration policy in rich countries prolongs the reign of poverty in poor." (p.282-283)

The waves of immigration into the United States during the first decades of the twentieth century were bearable because most residents and immigrants agreed that the newcomers [were of similar background and] should adopt the language and the ways of the residents as rapidly as possible. The process was called 'assimilation.' Today, however, assimilation is out of favor: diversity is the magic word. 'Ethnic pride' causes some minorities to resist assimilation. ... In recent years self-appointed leaders of immigrants have interpreted ethnic pride to mean ethnic intolerance – of the ways of the majority. ... Cosmopolitans, terrified of 'ethnocentrism' embrace what can be called 'ethnofugalism' – flight from the ethnic center of their own upbringing. Those who promote limitless diversity seem not to have noticed the disorder and violence associated with massive diversity in Africa and the Balkans. The faster the rate of immigration and the more diverse the reluctantly conjoined cultures, the greater is the threat of balkanization. And balkanized territories, under whatever name, are not noted for their devotion to political equality." (p.289)

Hardin's conclusion? It is simple:

This book has been a dissertation on the laws of nature that must be obeyed. ... The formula for survival and progress is simple: Unity within each sovereignty, diversity among sovereignties ...The wisdom is very old: Don't put all your eggs in one basket. Given

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> many sovereign nations, it is possible for humanity to carry out many experiments in population control. Each nation can observe the successes and failures of the others. Experiments that have a good outcome can be copied and perhaps improved upon; unsuccessful experiments can be noted and not repeated. Such learning by trial and error is perilous if the borderless world created by unrestricted migration converts the entire globe into one single hue experiment. As long as the intelligence of the human species is less than perfect, ... segmented parochialism is superior to unified cosmopolitanism in disclosing and capitalizing on the diverse possibilities of human nature." (p.295)

Because there is "no all-powerful world government to achieve universal population control: and there is no reason to expect one to develop," Hardin argues, "Population control must be coextensive with sovereignty" If governments and populations are to be truly responsible for limiting their production of children to the resources available to them, then we must adopt "discriminating" altruism rather than universalist "promiscuous" altruism (p. 233) This also implies discarding the rhetoric of those universalists who constantly condemn discriminating altruism as "xenophobia." The latter have created an entire battery of loaded words to promote promiscuous altruism while disparaging naturally discriminating altruism: the public of the Western nations have been taught to assign pejorative concepts to terms such as *nationalism, patriotism, nativism* and especially *discrimination*, all of which formerly had a positive connotation. We should remember the plain logic of the words of Pierre-Joseph Proudhon (1809-1865), who said that "If all the world is my brother, then I have no brother." The human race is constantly evolving, and the law of competitive reproduction is still the way of evolution. Promiscuous altruism which aims to assist the less productive to reproduce while restricting the reproduction of the more productive is a reversal of evolution, and can only lead to the failure of mankind as a species.

A Question of Intelligence
Daniel Seligman
Birch Lane Press, 1992; 239pp. $16.95

On February 28, 1969, the *Harvard Educational Review* published

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one of the most controversial articles of contemporary scholarship. "How Much Can We Boost IQ and Scholastic Achievement?" by Arthur Jensen caused quite a stir for arguing that individual and group differences in intelligence are due Primarily to heredity. Since then Jensen has endured classroom disruptions, death threats, canceled symposia speeches, suspended research projects and legal hurdles in testing California school children. Nonetheless, as a leading authority in his field, he has weathered one of the stormiest careers in academe.

As *Fortune* columnist Daniel Seligman points out, advocates of the Great Society still think of Jensen as "the skunk at the garden party". Researchers have conducted several extensive studies on intelligence since Jensen's 1969 paper and the ranks of the skunks have grown. These findings are reviewed in his book *A Question of Intelligence: The IQ Debate in America*. While assessing the technical literature, Seligman noticed a peculiar trend in the news coverage of IQ testing. What often passes in the media as a scholarly "debate" over intelligence is essentially a false dichotomy and reflects upon the interpretive biases that are inherent in the media.

This layman's guide on intelligence has its own turbulent history. A few years ago, Seligman received a generous advance from Whittle Communications, the intended publisher of the manuscript. Shortly before the book went to press, Chris Whittle decided that the text was too "controversial" to publish. As a result of Whittle's last minute cold feet, Seligman ended up with the hefty advance and a well - written manuscript that was rejected for being politically incorrect.

Seligman's candid approach to this topic makes his work controversial. Various taboos associated with IQ testing are addressed: the reliability of testing data for educational and employment selection, the question of cultural bias, heritability, socioeconomic disparities, and gender and racial differences in IQ levels. Plodding carefully through this minefield of explosive issues, Seligman gets to the bottom line while omitting the technical jargon. The scientific findings are presented in a matter-of-fact style without compromising accuracy.

It may surprise the reader that a majority of testing experts have reached a consensus on several IQ related issues: First, more experts agree than disagree on what "intelligence" is; Second, that IQ tests effectively measure what is considered to be "intelligence;" Third, "test

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bias" can be reasonably minimized and the testing data predict equally well for different ethnic groups; Fourth, both heredity and environment have an impact on intelligence.

Seligman introduces the reader to one of the largest ongoing twin research programs: The Minnesota Center for Twin and Adoption Research. Under the guidance of Thomas J. Bouchard, Jr., a team of behavioral scientists at the University of Minnesota are pinpointing environmental and hereditary influences on human behavior by studying identical and fraternal twins. Twin studies show that the similarities in twin personalities, IQ level, habits and hobbies are more tangible than mere upbringing. These similarities often remain even though some identical twins were raised in separate environments.

Recent behavioral genetic studies reveal some unintended twists as to how researchers now view the input of heredity and environment on the development of intelligence and personality. The prenatal environment is considered to be more important than what was originally believed while genetics may play an especially prominent role in adult life. The specifics of how environmental variables determine behavior still remain a greater mystery to behavior geneticists than the influence of genetics.

Although a degree of consensus exists over the basics, scholars remain divided over a few unresolved crucial areas. Here Seligman delves briefly into the pros and cons of "street smarts" or practical intelligence, whether or not IQ is basically unitary or divided into various independent abilities and if intelligence levels are on the rise or decline.

The concept of general mental ability, identified as simply 'g' by the eminent British psychologist Charles Spearman, has returned to the forefront of contemporary research. Scholars like Jensen who stress the importance of 'g' (general ability) continue to notice its presence in a variety of demanding skills that involve a given level of abstract reasoning. Lately, Jensen has focused upon the relationship between 'g' and "reaction time". Reaction time is a speed measurement for an elementary task.

Seligman devotes a chapter to the bizarre twist in the Cyril Burt controversy. Burt, an eminent British psychologist who died in 1971, was accused of faking twin data that bolstered the hereditarian view of intelligence. Several damaging allegations that were publicized in

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a biography of Burt convinced many of Burt's misconduct. However, most of what was thought to be an open and shut case went up in smoke with the findings of two painstakingly thorough studies. Both authors strip away the charges of fraud by showing that the allegations against Burt were highly tenuous.

Seligman ventures into the area of eugenics by pointing to the potential eugenic windfall of the Human Genome Project. He applauds the impressive results of the Repository for Germinal Choice (RGC), set up by Dr. Robert Graham in California – a 'high IQ' sperm bank that has already helped to bring into existence more than 150 bright 'brave new kids.' Successful programs like the RGC could enable responsible societies to reproduce future generations of gifted individuals, thus offsetting the negative consequences of a differential birth rate. In pointing to the track record of misapplied eugenic measures, Seligman realizes the public's reluctance to consider expanding such a program.

Critics of IQ tests often point out that other traits and human characteristics are as important as a sound IQ. Compassion, tolerance and understanding, some say, are necessary human attributes that are equally as important as intelligence. Others, like Rabbi Avi Shafran of the New England Academy of Torah, believe that the persistent racial differences which the data reveal have no practical significance.

The negative consequences of dodging the uneasy issues that surround IQ data clearly outstrip any benefits that emerge from abandoning IQ research. Before disregarding the broader meaning of the testing data, fair-minded observers should consider what the distinguished psychologist Raymond B. Cattell wrote in 1987:

> There is really no conflict between humanitarian goals and the aim of fostering high intelligence. The suggestion that the low intelligence individuals will be neglected has been simply a rationalization for doing nothing in the field of eugenic exploration. The reformer is as sensitive as any to the worth and dignity of every individual, regardless of gifts. But the greatest happiness of the greatest number, even in the lower ranges of intelligence, demands a birth rate adjusted to competence.

Seligman's arguments have policy implications for the present U. S. administration. Liberal policy advocates, like educational reformer

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Jonathan Kozol and Economist Lester Thurow, argue for more government "investment," namely, increased funding for public schools, plant modernization and employee training. Kozol believes that more funding for Head Start and resource parity for inner city schools will help reduce the existing inequalities of the U.S. public educational system. The fallacy of their reasoning is essentially a misdiagnosis of the problem. The blind spot is in assuming that human inequalities directly flow from a neglected funding of government programs. As Dwight J. Ingle once wrote, "Lack of water is not the cause of fire." These same reformers continued to dismiss the social implications, which Seligman puts squarely:

> The single most important reason for hostility to IQ testing in America today is the country's commitment to the idea of equality. For all their utility and explanatory power, IQ scores insistently convey a message that egalitarian America does not want to hear. The message: that people are unequal in mental ability.

Perhaps this explains, as Jensen once argued, why the boosts from Head Start programs continue to be short terms gains. It may also help explain the successful competitive performance of Asian nations.

Kevin Lamb

The Great Sex Divide
Glenn Wilson
Scott-Townsend Publishers, 1992
Box 34070, N.W. Washington D.C. 20043
ISBN 1-878465-04-X $20.00

Glenn Wilson, Senior Lecturer in Psychology at the Institute of Psychiatry, University of London, has here produced a survey of male-female differences which is not only entertaining reading, but also provides non-specialist with an invaluable summary of the result of psychological research in the study of contrasting male\female personalities.

It is frequently claimed that men and women are psychologically similar, with, apart from their reproductive roles, few perceptible behavioral or psychological differences, and that these are primarily

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to socialization. According to this theory, differences in behavior between the sexes are learned: boys are taught to suppress tears and to engage in rough, competitive activities, while girls are encouraged to play with dolls and to develop personal relationships and domestic skills. So-called 'masculine' and 'feminine' behavior patterns are seen by extreme environmentalists as solely due to social acculturation or programming from an early age.

Glenn Wilson examines this hypothesis in the light of scientific evidence from human biology, anthropological studies, and the animal world. He argues persuasively that it is essential to recognize that innate male and female psychological differences exist in addition to the obvious physical disparities and that an acknowledgement of such differences does not undermine the right of the sexes to equality before the law; rather that it can help men and women fulfill themselves and promote smooth and amicable relations between the sexes.

The book is written with a sense of humor. Its very first paragraph begins:" A certain professor once dreamed he had discovered the secret of the universe. Waking momentarily, he jotted it down on his bedside pad and resumed his slumber. In the morning he remembered the experience and excitedly snatched his pad to see what it said. It read: 'Higgamus hoggamus, women are monogamous; hoggamus higgamus, men are polygamous.' The professor was greatly disappointed, for while he thought it was probably true, he doubted that it was any secret, let alone the 'secret of the universe'."

In his text, author Wilson attempts to answer such questions as: what is the nature and extent of the difference between men and women? If the difference exists, what is its origin or cause? How easily could the difference be dismantled, if this were agreed upon as a desirable end?

His answers are a major disappointment for devoted feminists. In general, he accepts sociobiological or evolutionary explanations of the basic patterns of human behavior, including the differences between male and female behavior are concerned. His explanations of measurable and identifiable gender differences are readily explicable in sociobiological terms - as deriving from different evolutionary roles fulfilled by the sexes. Men have greater size and strength than women, and also a capacity for short-term energy output, whereas women have a superior capacity for endurance. Men

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have better mathematical and spatial skills, and a better aptitude for logical reasoning. Women easily develop verbal and social skills, and a stronger sense of empathy.

Men are temperamentally ill-inclined to accept submission. Men are aggressive, whereas female aggression is generally only defensive. Men seek to be independent, women seek attachment. Men are sensation-seeking while women are security-seeking. Efforts to locate the brain areas associated with male and female behavior indicate the importance of that area of the midbrain called the hypothalamus. This is about twice as large in males as in females. This does not stop Wilson from asking whether the differences need continue to dominate modern human society, and whether it is possible to reshape male-female roles by cultural engineering. What he concludes, however, is that attempts to eliminate sex role differences in our society therefore automatically works against our natural propensities, and can therefore result in tension and grief. Such social engineering would mean that we had to encourage submissiveness in men and punish submissiveness in women. Biological variables are far deeply rooted than any social variables in determining male and female behavior. Adverse cultural pressures not in tune with biological reality can cause psychological stress.

Finding activist feminists at fault, therefore, Glenn Wilson quotes from one of Betty Friedan's own books, *The Second Stage* wherein she admits that feminism has replaced old dissatisfactions with a new set of problems for women - problems which Wilson says are caused by attempting to go against gender-based psychological realities.

This is a highly readable and comprehensive survey of a much debated subject, which is to be commended for its simple but realistic approach to the subject. It is balanced scientifically but at the same time is so attractively and entertainingly written that it deserves to be in both university and public libraries. As it is available in paperback format, without doubt it will find its way into many private libraries as well. There is an index and a comprehensive bibliography for those who would wish to enquire more deeply into the subject.

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The Biological Roots of Human Nature
Forging Links between Evolution and Behavior
Timothy H. Goldsmith
New York: Oxford University Press

In this stimulating book, Goldsmith argues that biology has a great deal to say that should be of interest to social scientists, historians, philosophers, and humanists in general. He believes that anyone studying the social behavior of humans must take into consideration both proximate cause – the physiology, biochemistry, and social mechanisms of behavior – and ultimate cause, how the behavior came to exist in evolutionary time.

Goldsmith, a neurobiologist, draws examples from neurobiology, psychology, and ethology (behavioral evolution). The result is a work that overcomes many of the misconceptions that have hindered the rich contributions the biological sciences have to offer concerning the evolution of human society, behavior, and sense of identity. Among the key topics addressed are the nature of biological explanation, the relationship between genes and behavior, those aspects of behavior most likely to respond to natural selection, the relationship between evolution and learning, and some probable modes of interaction between cultural and biological evolution.

Virtually all social philosophy up until this time has tended to ignore the biological nature of mankind, and to assume "free will," the ability of man to operate independently of the laws of causality which so far as science is aware govern all that happens in the universe. The social sciences have to the present concentrated more on environmental than biological causes for human behavior, as though mankind existed above the level of physical and biological reality. This is now changing, although many who teach social science do not seem to realize it yet, so subdivided is the academic world into its own fields of bureaucratic origin. But it is sure to change eventually, short of the full scale implementation of some Stalinist Lysenko-type hegemony.

By reexamining the role of biological explanation in the domain of social development, the author has significantly advanced a more well-rounded view of human evolution and shed new light on the perennial question of what it means to be human. His book will appeal to biologists, psychologists and social scientists, humanists, and interested general readers.

The Mankind Quarterly

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Errata: *The Mankind Quarterly*, Vol. XXXIII, Summer, 1993
S. C. Kak, "Planetary Periods from the Rigvedic Code,"
pages 433-442.

Table 5: *Book (Mandala) Hymn Number Combinations*

1017 974 959 955 942 930 925 916 913 912 903 899 897 887 884 882
880 872 870 868 867 863 860 855 854 851 850 845 841 838 837 829
828 826 825 824 822 821 820 816 812 811 810 808 807 805 802 799
798 797 795 793 792 788 785 783 780 779 778 776 773 770 768 767
766 764 763 762 759 758 756 754 753 751 750 749 746 745 741 740
739 737 736 735 734 733 730 727 725 724 723 722 721 720 718 716
715 712 711 710 708 707 706 705 703 701 698 696 694 693 692 691
689 688 687 684 683 681 679 678 677 676 675 674 672 669 666 665
664 663 662 660 659 658 654 653 650 649 648 647 646 645 643 641
640 638 637 636 635 634 633 632 631 630 629 626 625 623 621 620
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297 296 295 294 293 292 290 287 284 283 282 281 280 278 277 276
272 271 268 267 266 264 263 261 259 258 255 254 253 251 250 249
247 244 241 239 238 237 234 232 229 225 224 222 220 219 218 215
212 210 209 207 206 205 201 197 196 195 193 192 191 189 188 180
179 176 172 167 166 163 162 157 154 150 149 147 145 137 135 133
130 120 118 114 105 104 101 92 87 75 62 58 43

Total numbers = 461

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Table 6: *Astaka Hymn Number Combinations*

1017 901 898 896 895 893 888 877 871 782 780 779 777 776 774 772
771 769 767 766 764 761 758 756 755 753 752 750 749 748 747 742
731 661 660 658 656 655 653 652 651 650 648 647 645 643 642 640
639 637 636 634 633 632 631 630 629 628 627 626 625 624 623 621
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526 524 523 521 520 518 516 515 514 513 512 511 510 509 508 507
506 505 504 503 502 501 499 497 496 494 493 491 490 488 486 485
483 481 480 478 415 410 408 407 405 402 399 397 396 394 393 392
391 390 389 388 387 386 385 384 383 381 380 378 377 375 374 372
370 369 367 366 365 364 362 361 359 357 356 286 275 270 269 268
267 265 264 262 261 259 256 253 251 250 248 246 245 243 241 240
238 237 235 146 140 129 124 122 121 119 116

Total numbers = 187

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Apollo the Wolf-god

Daniel E. Gershenson

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